



United States  
Department of  
Agriculture



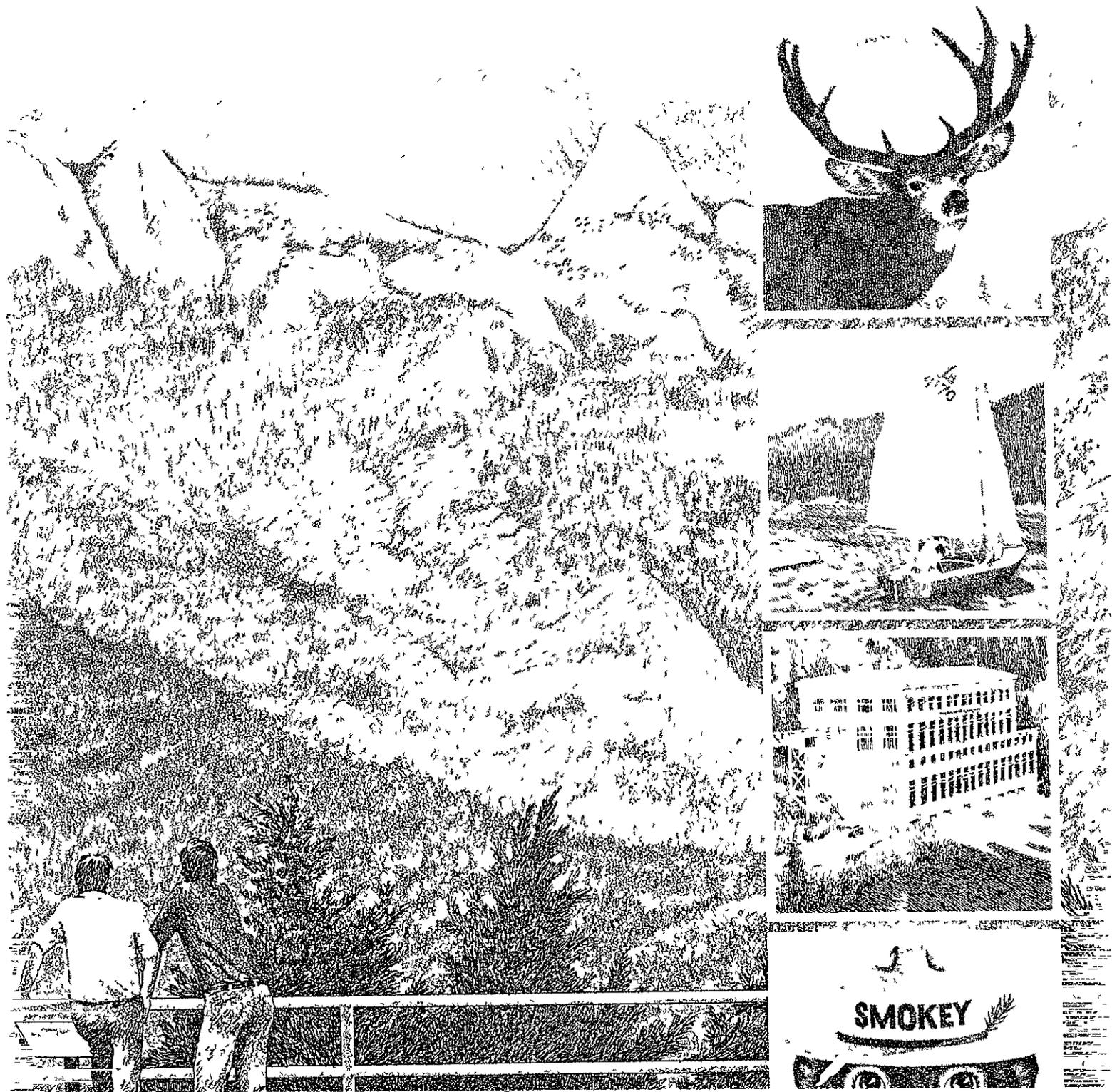
Forest Service

Pacific  
Southwest  
Region

1991

# FOREST LAND AND RESOURCE MANAGEMENT PLAN

## Sierra National Forest



SMOKEY

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# Chapter 1.0 – Introduction



## 1.0 INTRODUCTION

### 1 1 PURPOSE OF THE FOREST PLAN

This Forest Land and Resource Management Plan (Forest Plan) was developed to direct the management of Sierra National Forest. The goal of the Forest Plan is to provide a management program reflecting a mix of activities, allow use and protection of Forest resources and fulfill legislative requirements while addressing local, Regional and National issues. To accomplish this, the Forest Plan describes how issues were dealt with, the desired future state of the Forest, forestwide management direction, management prescriptions for individual management areas; schedules of proposed and possible outputs and activities, management standards and guidelines; monitoring and evaluation requirements; and location maps. The Forest Plan is applicable to all National Forest land administered by the Sierra National Forest.

Preparation of the Forest Plan is required by the Forest and Rangeland Renewable Resources Planning Act (RPA), as amended by the National Forest Management Act (NFMA). Assessment of the Forest Plan's environmental impacts is required by the National Environmental Policy Act (NEPA) and the implementing regulations of NFMA (Title 36 Code of Federal Regulations 219).

The planning horizon is 50 years, but NFMA regulations require Land and Resource Management Plans to be applicable only for 10-15 years with projections for the following 40 years. Further, the Plan must be re-evaluated during the first 10 years by analyzing the management situation during the fifth year to assess the need for amendment or revision and then to amend or revise the Plan if it deviates excessively from planned results.

### 1 2 RELATIONSHIP OF THE FOREST PLAN TO OTHER PLANS

All current resource management plans for the Forest will be replaced by the Forest Plan or the land allocation direction in them will be adopted as part of the Plan. The Forest Plan will be implemented and kept moving through short-term plans, such as project work plans and annual and five-year operating plans. Most short-term plans and projects will be subject to an environmental analysis, as required by NEPA. An analysis done under the aegis of the Forest Plan EIS identifies the environmental consequences of a proposed action and its alternatives, and specifies mitigating and coordinating measures in addition to those specified by the Forest Plan.

When approved, the Forest Plan will supersede the following individual plans now being used to manage the Sierra National Forest:

1. District Multiple Use Plans, and
2. Timber Management Plans.

The Forest Plan will incorporate the land allocation from the following individual 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) (1993),
8. Off Highway Vehicle Travel Plan (1977),
9. Grazing Allotment Plans,
10. 5-Year Range Improvement Plans ,
11. North Kings Deer Herd Plan (1981),
12. Yosemite Deer Herd Plan (1981),
13. Oakhurst Deer Herd Plan (1984),
14. San Joaquin Deer Herd Plan (1985),
15. Huntington Deer Herd Plan (1985),
16. Fishery Management Plan for Lahontan Cutthroat Trout (1986),
17. Paute Cutthroat Trout Recovery Plan (1985),
18. Peregrine Falcon Recovery Plan (1984),
19. Tri-Forest Monitoring Plan (1989),
20. Forest Development Transportation Plan,
21. Facility Master Plan (1989), and
22. Kings River Special Management Area Plan (1990).

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 & Scenic River Plan (1991),
- 7 Kings Wild & Scenic River Plan (1991), and
- 8 Off Highway Vehicle Travel Plan

### 1.3

#### FOREST PLAN IMPLEMENTATION PROCESS

Upon approval of this Plan by the Regional Forester, all land and resource management activities and all budget proposals will be based on the Plan. As soon as practicable after approval, all permits, contracts, cooperative agreements and other instruments for use and occupancy of the Forest's land will be brought into conformance with the Plan, subject to existing rights. Note that previous contracts for timber or other commodities not yet harvested may preclude bringing such activities into full conformance with this Plan.

The Forest Plan and the resource implementation plans will be carried out by the District Rangers and their staff. The Plan is comprised of a set of goals and objectives for the Forest, and standards and guidelines for both the Forest and each Management Area. These reflect the capability and suitability of the land to support various activities. The District Rangers' staffs will plan and conduct resource projects that meet this direction. Projects will continue to be planned and evaluated through the interdisciplinary process. District and Forest staffs will conduct environmental analyses and document them in the appropriate environmental documents (such as Environmental Assessments), which will be tiered to the Forest Plan EIS (40 CFR 1508.28).

If a proposed project on National Forest land is determined to be incompatible with the direction of the Plan, the project will be revised or not permitted. Conflicts that recur will result in a review of the relevant management direction in the Plan, according to its monitoring and evaluation process (Chapter 5), and may lead to Plan amendment or revision.

By the time the Forest Plan is implemented in 1991, budget proposals for 1991 through 1992 based on current planning will have been submitted to Congress. These

budgets may or may not meet budget requirements of the approved Forest Plan. Moreover, Congressional appropriations and allocations of the Chief and Regional Forester during any future period may or may not meet budget requirements of the approved Forest Plan. In these situations, the Forest Supervisor will change the proposed Plan implementation schedules to reflect differences between proposed Plan budgets and actual appropriated funds (36 CFR 219.10e).

### 1.4

#### FOREST PLAN AMENDMENTS, REVISIONS AND APPEAL RIGHTS

The following excerpt from NFMA 36 CFR 219.10(h) provides a complete discussion of the concept of public appeal of the Plan approval decision.

The provisions of 36 CFR, part 217, Appeal of Decisions Concerning the National Forest System, apply to any administrative appeal of the Regional Forester's decision to approve a forest plan. Decisions to disapprove a plan, and other decisions made during the forest planning process prior to the issuance of a record of decision approving the plan, are not subject to administrative appeal.

### 1.5

#### ORGANIZATION AND USE OF THE FOREST PLAN

The Forest Plan is new and complex. To the uninitiated it may be difficult to understand the various sections and their use and relationships. A brief explanation of the various sections follows to give the reader a "mund's eye" view of the entire plan and how each section is to be used.

Chapter 1 describes the purpose of the Plan and the implementation process.

Chapter 2 describes issues and concerns.

Chapter 3 describes the existing management situation in the Forest.

Chapter 4 is the heart of the plan. It contains all management direction. These implementing directions provide the goals, policies and objectives necessary to begin moving toward the desired future condition. Direction begins with a set of Forest goal and objective statements, which generally apply to the entire Forest. They may not be appropriate in all situations or areas so some understanding of their appropriateness is necessary.

The goal and objective statements are followed by a description of the proposed or desired future state of the Forest and the general management prescriptions for the Forest.

Also included in this chapter are management standards and guidelines. These are mitigating and coordinating requirements, as required by NEPA, NFMA and the Multiple-Use Act, which specify where, when, how much or under what conditions, certain activities or conditions may or may not occur. Management standards and guidelines supplement management prescriptions. They often require resource and support element maps, specifying where the standard and guideline is applicable. Many standards and guidelines are applicable to less than the entire Forest. They may cover a very broad area or be specific to a single site. Finally, individual management areas are described. These descriptions include a listing of the applicable prescriptions, standards and guidelines and proposed activities and outputs.

Chapter 5 presents monitoring and evaluation requirements of the Forest Plan. Monitoring and evaluation provides information on the progress and results of the Forest Plan. If progress and results deviate significantly from that planned, they may cause a plan amendment or revision prior to the NFMA requirement for revision within ten years, or reanalysis in five years.

Chapter 6 contains the appendices. It includes needed resource implementation plans, research needs and tentative 10-year timber sale action plan.

Plan and element maps in the accompanying packet serve two purposes. The Forest Plan Map identifies individual management areas and their management emphasis. Resource and support element maps supplement standards and guidelines, supplying location information. Element maps are of a very small scale to simplify presentation of their concepts to the reader. Upon approval of the final Forest Plan, the Forest ID team will produce large scale maps for use by field personnel.

In summary, Chapters 4 and 5 provide direction and guidance to the Forest's managers on what is planned, how much should be done and when and where it should occur. Mitigation and coordination requirements are specified and a review and control mechanism is provided.

## 1.6 VICINITY

Sierra National Forest is located on the west side of the central Sierra Nevada Range in Fresno, Madera and Mariposa Counties in the State of California. The exact center of California is located in the Forest. The forest is bordered on the west by the eastern foothills of 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 1-hour drive from Madera or Fresno, a 3-hour drive from Stockton or Bakersfield, and a 6-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 boundary

## 1.7 MANAGEMENT PRESCRIPTION PROCESS

A management prescription, as developed by Sierra National Forest, is an overall strategy for managing resources of a specific area of land 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 to each prescription. The number of prescriptions and the size of the area to which they apply within each management area are described in Chapter 4.

Sixteen general management prescriptions have been identified for use in the Forest. The prescriptions highlight resource emphasis and/or objectives to be accomplished. These prescriptions are described in Chapter 4.

The practices and activities to be carried out under the management prescriptions are also listed in Chapter 4 under each management area description or, if forestwide, in Table 4.03. 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.

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. The tiering process 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 in greater detail and intensity than other parts. The direction tiering process goes from very broad to very specific.

Used in this context, a prescription for a location or project within a management area consists of the general management prescription and 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 singular or combined analysis area standards and

guidelines. This process is graphically depicted in Figure 1.02 to aid the reader's understanding. Element maps have been developed to show where certain standards and guidelines apply.



FIGURE 1.01 - LOCATION OF SIERRA NATIONAL FOREST, CALIFORNIA

**FIGURE 1.02 DIRECTION TIERING PROCESS**

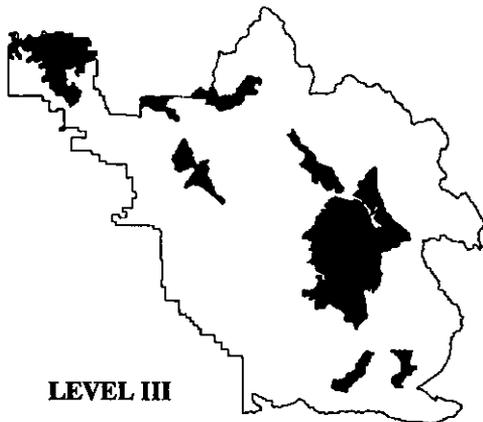


**LEVEL I Forestwide Management Goals and Objectives**

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

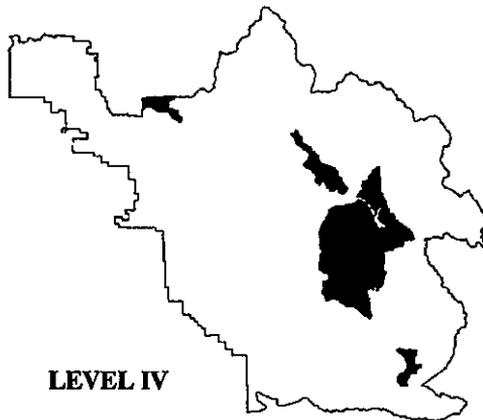
**LEVEL II Forestwide Standards and Guidelines**

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



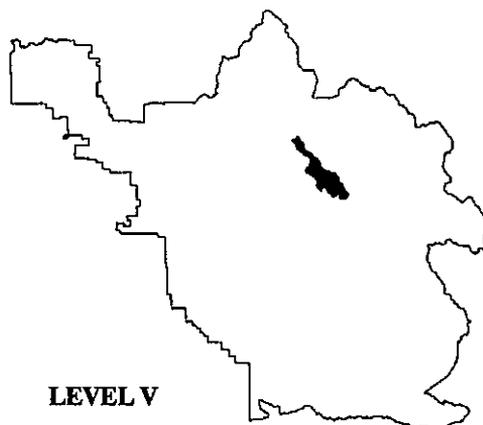
**LEVEL III Management Area Directions**

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



**LEVEL IV Grouped Analysis Area Direction**

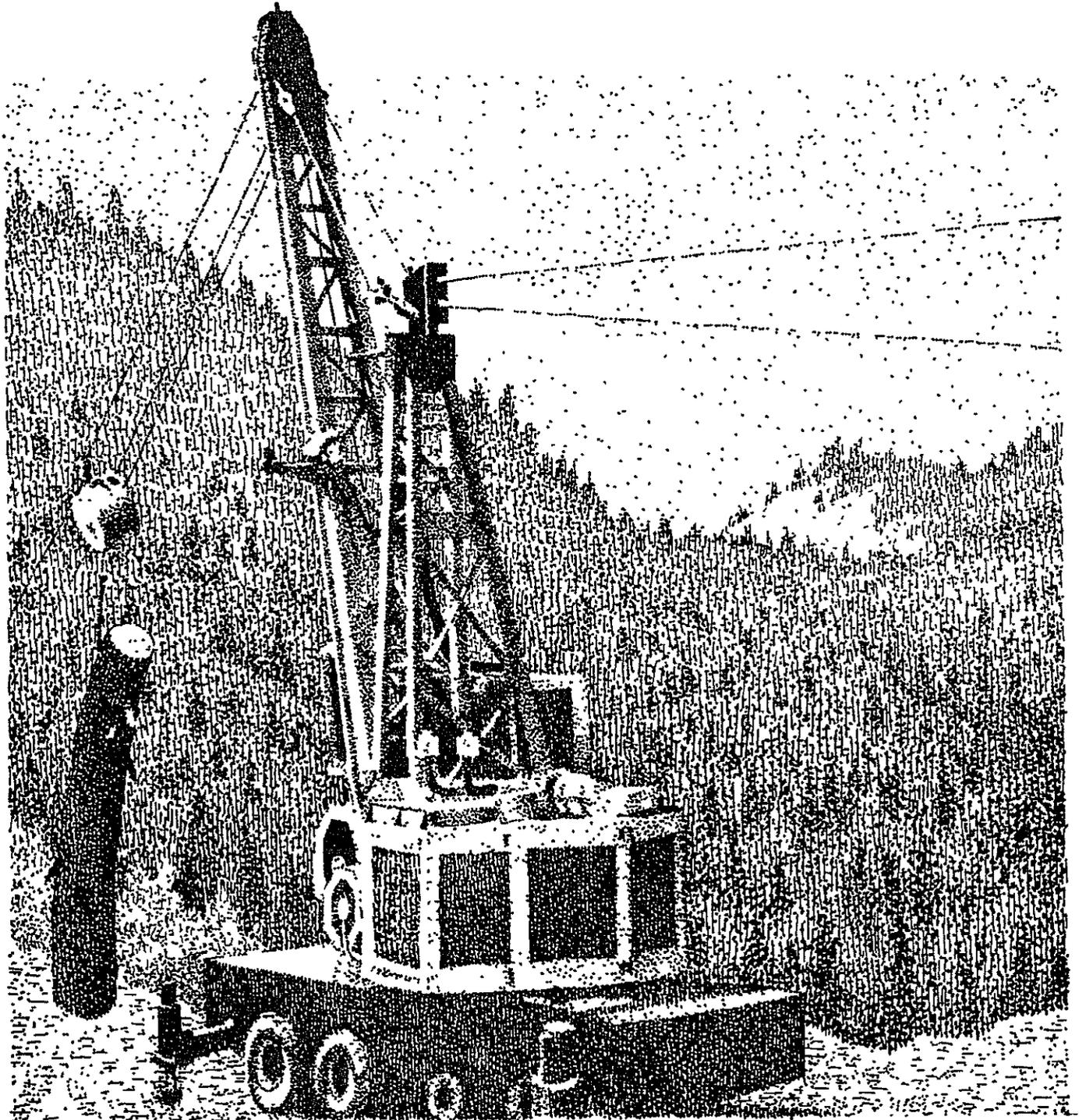
This direction consists of standards and guidelines that apply to more than one analysis area within a Management area, but not to the entire Management area.



**LEVEL V Single Analysis Area Direction**

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

## Chapter 2.0 – Public Issues and Management Concerns



## 2.0 PUBLIC ISSUES AND MANAGEMENT CONCERNS

Forestwide public issues and management concerns were developed from comments received over the years and solicited specifically for this planning effort from the public and Forest Service employees.

The initial scoping process in 1979 resulted in identifying eight broad issues and concern areas from which 27 planning questions were derived. These planning questions are listed in the FEIS, while the broad issues are summarized below. Specifics of the scoping process and detailed issue statements can be found in the planning records.

During the public comment period for the re-release of the DEIS in September of 1986, five additional issues arose from public review concerning allowable sale quantity, clearcutting, economic affect on North Fork, spotted owls and budget. These new issues are identified and displayed in this section with a star next to the issue. Section 2.2 discusses the Forest resolution of each issue.

### 2.1 SUMMARY OF ISSUES

#### Recreation

Issue - What strategy of recreational opportunity development and utilization will be emphasized in terms of kind and amount of recreation and where will they be located?

#### Visual Resources

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

#### Further Planning

Issue - How will the Forest manage Further Planning Areas?

#### Wild and Scenic Rivers

Issue - How will the Forest manage rivers that are inventoried for possible inclusion into the Wild and Scenic River system?

#### Fish and Wildlife

Issue - What kind and amount of fish and wildlife habitat will be provided and what are the effects of management on habitats?

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

#### Timber

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

\* 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?

#### Energy

Issue - How will Forest management contribute to efficiency in the use of energy?

#### Hydroelectric Development

Issue - How will the Forest respond to the hydroelectric development issue relative to management of other Forest resources?

#### Economics

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

#### General Issues

- Use of fire to enhance resource values.

- Desirability of vegetation manipulation

- Adequacy of soil and water quality protection.

- Use by domestic cattle versus other resource use of the Forest's range.

### 2.2 RESOLUTION OF ISSUES

Because public issues generally represent opposing views, some issues are likely to remain controversial during the life of the Plan. In these cases the goal is to convey the strategy in such a way that those with opposing views understand why a issue was resolved in favor of one of the other viewpoints.

Issues and concerns, no matter how controversial, represent the topics that must be addressed if the Plan is to provide appropriate direction for the Forest Alternatives presented in the DEIS explore different ways to resolve the identified issues and concerns. The proposed action represented by this Plan resolves the issues in the following manner:

## Recreation Issue

Management Areas 1, 2 and 11 are formulated specifically to deal with the recreation issue. Management Area 1, containing 75,631 acres, emphasizes developed recreation that stress rural and roaded natural recreational opportunities. Management Areas 2 and 11 emphasize dispersed recreation that stress primitive and semiprimitive recreational opportunities. The recreation management direction and standards and guidelines deal with the level and intensity of recreational opportunities within these three management areas, as well as the rest of the management areas in the Forest.

Two element maps, which are an integral part of this Plan, also aid in resolving the recreation issue. The first map shows the recreational opportunity class objectives; the second, visual resource objectives.

## Visual Resource Issue

This Plan calls for visual quality objectives of Retention and Partial Retention along most major recreational roads and trails and around all major recreation areas

## Further Planning Issue

The California Wilderness Act greatly reduced the areas of issue in the Forest. All but one nonroaded area, Kings River B (containing 24,368 acres), were either designated Wilderness or exempted from Wilderness consideration during this planning cycle. The Kings River B further planning area has been Congressionally designated as the Kings River Special Management Area and will be managed primarily for public outdoor recreation and enjoyment of certain areas within the Sierra and Sequoia National Forests. Wildlife and Fish Management of these areas will be maintained. This special designation, however, does not preclude future wilderness consideration

Of the released areas, the proposed plan emphasizes commodity production, such as timber on areas with medium to high productivity. These areas include the Cattle Mountain and Crater/Rattlesnake areas within the San Joaquin B released area and the nonwilderness portion of the Rancheria released area.

The remaining released areas primarily fall into the two dispersed-use management areas. Emphasis is placed on semiprimitive recreational opportunity classes and wildlife management. Where management activities do occur, most roads will be closed upon completion of the activity for the retention of the scarce semiprimitive opportunities

## Wild and Scenic River Issue

Sierra National Forest coordinated a joint agency analysis which included the seven inventoried rivers (34 segments, 224 miles, 72,000 acres) in three National Forests, two

National Parks, one National Monument and one BLM district. Rivers may be either recommended for designation, not recommended or have a preferred recommendation. After designation by Congress, each agency will manage its segments to the highest potential classification until detailed boundaries are established and classifications are finalized.

In 1987, Congress designated 31 miles of the Merced and South Fork Merced Rivers and 16.5 miles of the Middle Fork Kings River, all administered by Sierra National Forest, as Wild and Scenic. Classifications and boundaries have been established in a separate 1989 EA. No further recommendation will be necessary in this Plan for these designated rivers, however, two segments of the Merced, administered by the BLM, from Briceburg to Lake McClure will be considered. The BLM, as a cooperating agency, will make final recommendation of these two segments. The Forest is recommending 33 miles for Wild and two miles for a nondesignated classification, totaling 35 miles and 11,200 acres

## Fish and Wildlife Issue

The kind and amount of fish and wildlife habitat provided by this Plan are intended to result in diversified communities of plants and animals. Specific management direction and standards and guidelines are provided to emphasize fishery resource and wildlife habitat management in riparian areas and meadows. Down logs will be managed at densities that are expected to maintain associated species well above viability thresholds. Standards for snag management will maintain primary cavity-nesting species near current levels. The Forest will manage hardwoods in a manner that meets the needs of both wildlife and timber. Late seral stage ponderosa pine will greatly exceed current inventories after the fourth decade, but late seral stage mixed conifer habitat will decline by over half by the fifth decade

An active fish habitat improvement program averaging 100 acres/structures/year will be accomplished by this Plan. Standard and Guidelines intended to protect fish habitat can be found in Section 4.5 under Fish, Wildlife & Sensitive Plants, Range, Facilities, Riparian, Soils and Water.

A regional network of California spotted owl habitat areas (SOHAs) has been established to maintain habitat for this and other species associated with late seral stage forests. This plan establishes 29 SOHAs in the Forest. All SOHAs have no scheduled timber harvest.

Standards and guidelines favoring deer habitat management will be applied to 75% of the identified deer holding areas and population centers in commercial forests. Deer herd population goals and assigned Forest targets for goshawks, Forest recovery goals for peregrine falcons and bald eagles will be met by this Plan. Sensitive furbearers are maintained at current levels by this Plan

Sensitive plants will be managed to ensure that species do not become listed as threatened or endangered because of Forest Service actions

The effects on fish and wildlife when managing other resources are addressed in Chapter 4 of the FEIS. This Forest Plan provides a monitoring program to assess the long-term effects of other resource management on fish and wildlife.

#### Timber Issue

The six main questions to be resolved under the timber issue are listed below.

1. How extensive will timber harvest be?
2. How intensive will timber management be?
3. How will new timber stands be created?
- \* 4. What should the allowable sale quantity (ASQ) level be?
- \* 5. Is clearcutting necessary to meet the Forest's long-term timber resource management goals?
- \* 6. What are the socio-economic consequences of the changes in allowable sale quantity (ASQ) on the community of North Fork and surrounding area?

How extensive and intensive will timber harvest and management be? Of approximately 1,275,000 acres in the Forest, 393,700 were determined to be tentatively suitable and available timber lands. An additional 18,700 acres of forested land were not capable of growing above 20 cubic feet/acre/year or were not assured of being restocked within five years. This Plan calls for managing timber land according to one of four regulation or management classes. Timber management intensity will be measured by the number of acres assigned to one of the following four classes

a) Full-Timber Yield Management (Class I): 107,100 acres of Forest land will achieve full timber production. They are primarily managed using even-aged silvicultural systems. Rate of harvest is limited only by economics, long-term sustained yield and dispersion of regeneration harvest units. Timber stands may be regenerated once 95% of CMAI is reached.

b) Modified-Timber Yield Management (Class II): 65,100 acres of Forest land will have modified timber production due to other resource values, deer management areas and partial retention of visual quality areas. They are primarily managed using even-aged silvicultural systems, however, the total amount of regeneration harvest is limited by a need for more physical dispersion of harvest units. Rate at which these stands are cut in any one decade is about two-thirds the rate possible in Regulation Class I.

c) Limited-Timber Yield Management (Class III): 156,700 acres of Forest land will have limited timber production due to other resource values. These include riparian areas, unstable soils and visual quality

(retention) areas. The land is managed primarily using uneven-aged silvicultural systems. Regeneration harvest openings are limited because of other resource values. Timber harvest from this land, during the Plan period, will amount to about one half of the net growth.

d) Minimum-Level Management (Class IV): 64,800 acres of Forest land will receive only custodial management, with no scheduled timber harvest. They include some California spotted owl habitat and other areas where long-term scheduled timber harvest is not compatible with other planned uses.

How will new timber stands be created? Four regeneration systems are planned. Clearcutting, Shelterwood, Group Selection and Individual Tree Selection. The regeneration system selected will be based upon a site specific analysis of each harvest area. Clearcutting and shelterwood harvests are predicted to be the dominate methods on Regulation Class I and II lands because they have, to date, proven to be the most reliable regeneration systems. Management emphasis will be to try more group selection regeneration on Regulation Class I and II land. This will better identify where group selection can meet objectives. In red fir forest type, shelterwood is the primary system with clearcutting being restricted to 2,000 acres/decade until planting survival becomes more predictable. Individual tree selection system will be the dominate method on Regulation Class III land.

What should the allowable sale quantity (ASQ) level be? The annual ASQ under the previous Timber Management Plan was about 152 MMBF. Over the last 30 years, the average annual harvest has been 135 MMBF. For the period 1960-1969 the annual average harvest was 129 MMBF; between 1970-1979, 157 MMBF. The period 1978-1982 contained both a historical high and low harvest. This was a consequence of the salvage sale program following the 1976-1978 drought. The 1981 low was the consequence of the general 1981-1982 National economic recession. The average harvest for the 1980-1989 period was 120 MMBF. For the most recent five years (1985-1989), the average annual harvest has been 151 MMBF, with the 1989 harvest reaching 166 MMBF. The timber industry considers the 1968-77 period the best reflection of its long-term timber needs.

The Forest Plan establishes an annual ASQ of 88 MMBF. That ASQ level will not meet local industry raw material demands during periods of a strong lumber market. As a result, some reassignment of production between the four existing sawmills may occur. That adjustment may mean curtailment or closure of one of the sawmills over the long term. While a higher ASQ will reduce the risk of reallocation of production, it will not guarantee the continued production at each current location.

Factors preventing the Forest from meeting the demand for a higher ASQ are:

1. All SOHAs on CAS land have no scheduled timber harvest during the 160 year planning horizon because of physical constraints on the ability to meet long-term California spotted owl and sensitive furbearer habitat requirements.
2. Until planting survival in red fir clearcuts is consistently better than 80%, no more than 200 acres per year may be scheduled for clearcutting.
3. No scheduled timber harvest is planned in Analysis areas 3, 7, 18, 45, 55 and 58 because of conflicts with other resource goals including non-roaded dispersed recreation use (Analysis Area 3 and 18), a proposed research natural area (Analysis Area 7) and developed recreation use (Analysis Area 45, 55 and 58)
4. The rate of timber harvest is limited to achieve visual quality objectives for destination developed recreation areas (Analysis Area 14, 17, 28, 45 and 55) and major travel routes to such areas.
5. In the ponderosa and mixed conifer type about 4.5% of the future softwood production potential is forgone in order to grow a desired amount of mast producing oaks for wildlife
6. Three percent of the existing inventory is needed to provide replacement snags in regeneration units.
7. In riparian areas, scheduled timber outputs are limited to skyline corridors, new roads and timber removed to benefit riparian dependent species.

There is not enough land base on the Forest to satisfy all needs. The final ASQ of 88 MMBF is a balance between maximizing timber on land capable and suitable for growing timber and protecting other values and resources, such as visual quality, fish, wildlife and riparian areas. An increase in the ASQ above 88 MMBF will result in an unacceptable risk and impact to non-timber resources.

Is clearcutting necessary to meet the Forest's long-term timber resource management goals? There are three reasons why clearcutting is the Forest's principle stand regeneration system.

One is biological, which includes stands heavily infected with mistletoe or stands where too few crop trees remain. The only effective treatment to prevent re-introduction of mistletoe is to remove all trees. In stands where too few crop trees remain, starting over is the most effective method to meet acceptable growth rates. Under these conditions clearcutting is the optimum method.

The second reason is post-sale treatments can best be accomplished from clearcutting. These treatments include disposal of harvest residue (reduces risk of fire mortality), site preparation for planting, control of

competing vegetation (assures survival) and protection of new stands from damage in succeeding harvests.

The last and perhaps most important reason is even-aged management is necessary to sustain the annual ASQ of 88 MMBF. The inventory and growth on existing stands will only maintain the ASQ about sixty years (for Regulation Class I land). While an uneven-aged regeneration system may result in establishing new trees, actual experience indicates that growing new stands to minimum merchantability in 60 years can only be done using an even-aged system.

Actual selection of a silvicultural method is only made after a site-specific examination and evaluation. Where conditions indicate objectives can be reasonably accomplished without clearcutting, other methods are used. Thirty-six thousand acres of Regulation Class I and II lands have been assigned to uneven-age management.

Two other alternatives can achieve the planned ASQ while still reducing the amount of clearcutting. The first will increase the land base with existing timber inventory. This will provide additional existing volume and permit a longer time for the development of new uneven-aged timber stands. The other alternative will accept a decline in yield after the existing timber is liquidated until the new uneven-aged stands have developed. Wilderness classification and other resource objectives on Regulation Class II, III and IV land will prevent increasing the timber base. Forest Service policy is to plan for even-flow of timber products over the planning horizon (160 years). NFMA allows for a departure from the even-flow policy when necessary to meet Forest Plan goals. A departure to further reduce clearcutting will lead directly to a departure harvest schedule. A Forest timber harvest schedule that is a departure from the even-flow schedule will not be consistent with the Forest Plan goals.

What socio-economic impact does the ASQ have on North Fork and surrounding communities? Additional analysis and write-ups have been added to the various social and economic sections of the FEIS describing the effects of each alternative. The result of the analysis shows the Preferred Alternative with an ASQ of 88 MMBF may result in the closing of the North Fork mill during the current planning period. Should this occur, two things will happen, 1) there will be less local employment opportunity and 2) more volume will be available to the other mills dependent on forest timber.

#### Hydroelectric Issue

FERC is the lead agency on most hydroelectric projects and is responsible for development of environmental analysis for the projects. All applications for non-federal hydroelectric projects are filed with FERC. Because many large hydroelectric projects occur on National Forest land, the Forest Service participates as a cooperating agency in the NEPA process. The Forest inputs to FERC, through the 4e letter, issues Special Use

Permits and determines what are necessary mitigation measures to protect Forest land.

The FEIS expands considerably the discussion on hydroelectric development and a separate (hydroelectric) element has been established for its direction. The direction requires project environmental analysis, evaluation of secondary effects, mitigation for loss of public resources when feasible and appropriate, stream flows and flushing requirements to maintain fish populations downstream from project sites. The Plan also advocates retention of important rangeland, prime forest land and wetlands, unless other needs clearly override the benefits derived from retention of such lands.

#### Energy Issue

The energy issue was raised by the Forest Management Team in 1979 during the initial development of the Draft Plan. The oil embargo had caused high petroleum prices, resulting in long lines at the gasoline pumps, and energy was an issue of great concern. However, by the time the final draft was published in 1986, gas was plentiful and less expensive.

Because of the changed condition, the public did not perceive energy as an issue. Only two comments from the public were submitted on this subject; one favoring the construction of the co-generation plant at North Fork, and the other opposing the standard and guideline giving preference to the public for fuelwood.

During the planning process, the energy issue described in the DEIS was examined, and the Forest Management Team found the following: (1) Biomass conversion could not be estimated because of unknown variables, such as the supply of energy, its cost and the declining demand for firewood; (2) Oil and gas sources within the Forest were unknown; (3) Geothermal energy would not be developed, and (4) Demand for bus service to the Forest was minimal.

Energy saving efforts in the Forest have become routine since 1979, rather than part of long range goals and policies. Some of the Forest's practices include widespread use of smaller, more fuel-efficient vehicles, scheduled retrofitting of buildings for energy conservation and designation of public fuelwood gathering areas. While these efforts help reduce energy consumption, they contribute little to the overall energy issue

The Forest Management Team concluded that energy was not an issue of concern to the public, and since energy efficiency cannot be resolved in this planning effort, the issue is unresolvable. No further discussion of this subject will be included in the Plan.

#### Budget Issue

The purpose of the Forest Plan was to establish overall land allocations and display outputs based on the allocations. While the budget process may influence the outputs to be achieved in a given year, the land allocation and the standards and guidelines will not vary. The Forest Plan also includes a monitoring plan. If the Forest strays too far from accomplishing the objectives set in the Plan, a plan amendment or revision is required. See Appendix P in the accompanying FEIS for a detailed explanation of budgets and their relationship to the Forest Plan.

#### 2.3

#### GENERAL ISSUES

#### Prescribed Fire

Prescribed fire will be one of the primary tools used to accomplish program objectives in this Plan. It will be used to reduce fuels, create more nutritious deer browse and herbaceous forage and maintain natural conditions in wilderness areas.

#### Vegetative Manipulation

This Plan proposes an active vegetation manipulation program, in accord with the Forestwide Management Direction and Standards and Guidelines, to maintain or enhance timber, range, wildlife and recreational values. For example, vegetative manipulation is needed to increase tree growth, maintain tree species and ecosystem diversity, create fuelbreaks for fire protection and prevent insect and disease occurrence

#### Soil and Water

Protection of soil and water quality is an integral part of the proposed actions in the Plan. Riparian and water influence zones are established with a minimum of 100 feet from the shores of permanent streams, lakes and reservoirs. Intermittent and ephemeral streams are protected by established streamside management zones. Best Management Practices have been added for use on appropriate projects. Special standards have been established for highly erosive and highly sensitive soils. In addition, where soil and water problems exist from natural causes or past activities, this Plan proposes corrective measures.

#### Range and Wildlife

Levels of livestock grazing provided by this Plan are intended to result in balanced use by both livestock and wildlife. Allotment management plans will establish proper stocking levels, seasons and grazing practices which maintain or improve range conditions while considering future wildlife habitat values. Management Standard and Guidelines have been developed for range resources to be in harmony with other resource values,

such as soil protection, water quality, recreation, timber and wildlife. Conflicts between livestock grazing, recreation and wildlife values will be addressed and resolved on a case-by-case basis.

#### **Air Quality**

Air quality is not considered to be an issue because: 1) proposed burning is minimal, 2) current air quality is good, 3) elevation/weather factors allow smoke to disperse, and 4) Forest is far from population centers, therefore few concerns exist.

## Chapter 3.0 – Summary of the Analysis of the Management Situation



### 3.0

## SUMMARY OF THE ANALYSIS OF THE MANAGEMENT SITUATION

This chapter of the Plan presents summary statements for economic and social issues, resource elements and program areas.

### 3.1

#### SOCIAL ENVIRONMENT

The management and activities of Sierra National Forest affect individuals and groups of people living within the Forest's sphere of influence.

The Forest is located in Fresno, Madera and Mariposa Counties, and with the exception of the centralized urban areas, these counties can be characterized as rural, with recent significant population growth and cyclical employment trends.

Population growth in these areas has been rapid, exceeding that of the State in the previous 10-year period. The percentage of Native Americans in the local three-county area equals the State average, although the Black and Asian populations are smaller than the State average. The percentage of individuals of Hispanic origin (29%) greatly exceeds the State average of 19%.

Native American settlements and/or concentrations of population occur throughout the Forest's sphere of influence, but are located primarily in the Mariposa, North Fork, Auberry, Cold Springs and Table Mountain areas.

Within the Forest's sphere of influence, five social groups are identified as most likely to be affected by the management direction expressed by the alternatives. They are: Long-time residents, new arrivals, regional recreationists, second-home residents and Native Americans.

The impacts of the Plan on social groups are measured and analyzed by the effect on various aspects of the social groups: Lifestyles; attitudes, beliefs and values; group stability and cohesion, population growth, community services, law enforcement, solid waste, sewage, transportation facilities and municipal water supply.

### 3.2

#### THE ECONOMIC ENVIRONMENT

The Forest affects the economy by producing outputs 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.

Management programs on the Forest currently generate about 4,000 jobs in the local economy. The Forest also affects the local economy by sharing with local governments, revenues from the sale of goods and services - 25% of all receipts to the U.S. Treasury are returned to the State for distribution to the counties. Each county receives a proportionate share of the revenues, based upon National Forest acreage in that county.

Revenues from timber sales account for over 90% of Forest receipts. Recreation fees from campgrounds, recreational residences and the Sierra Summit ski area account for most of the remaining revenues. Because timber accounts for such a large share of total returns to the U.S. Treasury, subsequent county shares fluctuate widely. In 1979, a year with strong timber markets, county revenues were nearly \$4 million, while in 1982, a depression year in the timber market, counties received less than \$1 million.

Present net value (PNV) is the primary measure of economic efficiency used by the Forest Service. For the 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 increased. The budget for managing the Forest increased from \$6 million in 1975 to nearly \$19 million in 1982, but has held relatively constant since then.

### 3.3

#### RECREATION

The Forest has a variety of landforms, elevations, climate, vegetation and natural and man-made attractions that draw recreationists. It ranks among the top of all National Forests in recreation use. Demands for dispersed use areas and developed sites are expected to increase each decade. Conflicts for space among user groups and between recreational activities and resource management uses are now occurring and are expected to intensify.

There are a large number of developed and dispersed recreation areas within the Forest. In addition, adjacent to the Forest are two National Parks, three other National Forests and several large reservoirs, all of which have recreation facilities. Demand for recreation was determined by extrapolating 1982 recreation data in conjunction with population projections over the analysis period. Demand for developed recreation is expected to increase from 1.6 million visitor days in 1985 to 2.1 million visitor days by 2015. Demand for dispersed recreation is expected to increase from 2.3 million visitor days in 1985 to 3.3 million visitor days by 2015. The FEIS includes a discussion of demand in Section 3.5.1.1 and accompanying figures. Included in Appendices F and G

of the FEIS are demand and capacity comparisons for developed sites, dispersed sites and Wilderness by ROS class

### 3.3.1 Developed Recreation

The major types of developed sites sought by recreationists are campgrounds, resorts, and organization camps, all of which serve as a base for their visits and trips into dispersed areas of the Forest.

Except during August and holiday weekends, most developed campgrounds have space available, yet it is predicted that additional campground units will be needed. A limited increase in developed sites can be accommodated in major recreational areas such as Bass Lake and Huntington Lake. However, some increases are being made in association with new or relicensed power projects at other reservoirs. There is a need to improve low standard campgrounds and picnic facilities. Additional supervision and controls, to reduce conflicts and resource damage, are advisable at some sites

Commercial facilities are sufficient to meet demand. Some facilities need upgrading and services adjusted or changed to maintain needed viable operations. At others, conflicts or lack of general public need will mean eventual phase-out of the facility. Permits for the Huntington Lake Gift Shop, Huntington Lake Lumber Yard and the recreation residence on Lot 1E of the Angel Springs Tract will not be renewed when the present permits expire, based on decisions made outside this Plan. Sierra Summit is the only ski resort in the Forest. The owners are trying to keep pace with the demand for downhill skiing by implementing a long range expansion plan. Barring unexpected changes in demand, major changes by other suppliers in the area or problems in company economics, the demand for downhill skiing will be met.

### 3.3.2 Dispersed Recreation

There are at least 35 different dispersed uses listed in the Forest activity report. These uses include camping in undeveloped sites, hiking, hunting, fishing, cross-country skiing, sailing, horseback riding, OHV use and auto driving, to name a few. One intent is to provide a broad range of opportunities for dispersed uses. Some of the greatest potential for resource damage and user conflict are associated with dispersed recreation activities. Like developed site administration, increased supervision and control has been, and will be, required to reduce conflicts between users and to mitigate resource damage caused by activities. As future uses arise, they will be evaluated case-by-case for compatibility with ROS categories. Some may need to be restricted to certain areas and time periods under site-specific special use permit authorization.

The Forest has had an OHV Plan since 1958. Adjustments have been made in this plan to meet changing conditions and needs. The latest plan (1977) established regulations for OHV use while protecting other resources. Major changes now proposed as part of this Plan are to restrict OHV travel to designated routes and areas. A new Forest OHV Plan will define these changes. Until the new Forest OHV Plan is completed in 1991, the interim direction for OHV management will follow current direction as outlined in the 1977 plan.

During the interim period the following direction applies: 1) Zone A - closed to motorized use; 2) Zone B - OHV use except over-the-snow will be restricted to designated routes with three exceptions; 3) Zone C - over-the-snow use is restricted to designated routes; 4) Zone D - snow and land travel open with five exceptions; 5) Zone E - snow and land travel restricted to designated routes; 6) Maintenance Level 1 roads are open to summer motorized use unless designated closed; 7) Maintenance Level 2 roads open unless signed or gated closed; and 8) Maintenance Level 3, 4 and 5 roads are closed to unlicensed OHV travel. (See 1977 OHV plan for details)

Approximately 1,100 miles of forest trails are available for hiking, horseback riding and other uses. Many of them are in need of heavy maintenance or reconstruction. They vary in quality from trails that were developed for intensive use to barely defined routes (French Trail)

There are approximately 120,000 acres of non-roaded land outside of wilderness that are in relatively large blocks. These areas currently provide a wide variety of recreation in a primitive or semiprimitive environment

### 3.3.3 Other Recreational Areas

Several areas of unusual significance have been set aside to preserve their unique character and scientific features. Aside from these uses, visitors find these areas attractive for their primary or subsidiary recreational and educational goals. These areas are discussed in Section 3.20, Special Areas.

These natural resources, where special recognition or management may be justified, include groves of giant Sequoia, sensitive plants and areas of geologic or scenic interest. Sequoia/Kings Canyon National Park has identified more than 50,000 acres as having potential for recognition of natural history features. Designation of natural history features in the Forest should compliment, rather than duplicate, similar recognition or designation in National Parks and other National Forests

## 3.4 VISUAL RESOURCES

Few National Forests offer the range of scenic attractions found in the Forest. The Forest landscape is quite diverse, ranging from steeply rolling chaparral and

grass-woodland foothills 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. At the high elevations the knife-edged ridges, sharp peaks and steep-walled basins, frequently containing lakes, owe their form to the abrading action of glaciers. The steep-walled canyons and rolling topography of the lower elevations developed through water and wind erosion. Landscapes with the greatest variety of landforms, water features and vegetation are considered to be the most attractive. All Forest areas have been evaluated and placed into one of three landscape variety classes: distinctive, common or minimal. The distinctive class accounts for 38% of the Forest, the common, 48%; and the minimal the remaining 14%.

The most important areas within each variety class are those frequently seen by persons appreciative of scenic beauty. It is considered important that these areas have a more or less natural appearance. The degree of natural appearance, together with the variety class, describe the quality of the visual resource. An inventory of Visual Quality completed in 1979 found most of the scenic resource in good condition, Classes I, II and III. Only 5% (about 70,000 acres) was found to be in fair to poor visual condition. Nearly all of this area occurred on landscapes in the common or minimal variety class.

### 3.5 WILDERNESS

The Forest has 527,938 acres in five designated wildernesses, including all or parts of the John Muir, Ansel Adams, Kaiser, Dinkey Lakes and Monarch. Among these are some of the most and least popular wilderness areas in California, as evidenced by user data analyses.

Though recreation is but one of several objectives for which wilderness is established and managed, it receives the greatest use. Alpine and subalpine areas are particularly attractive to wilderness visitors. The high lakes, tarns, meadows and streams, bordered by rugged peaks overlooking expansive vistas, provide a setting that attracts a very high proportion of recreation use. Conversely, there are large portions of wilderness which lack these attractive qualities and receive little or no recreational use. Problems commonly associated with heavy use include lack of solitude, waste disposal, soil compaction, damage to vegetation and excessive numbers of old campfire rings.

Heavy levels of wilderness visitor use required some controls. Limits on group size and length of stay were implemented in 1970. User quotas have recently been established for entry points and certain travel corridors or zones. In the most congested areas, further user supervision and controls may be needed to mitigate or eliminate site damage and unsanitary conditions. On the other hand, there are many areas that are rarely visited,

indicating a need for education about wilderness opportunities to encourage better dispersal of visitors.

### 3.6 WILD AND SCENIC RIVERS

The Kings and Middle Fork Kings Rivers, from their sources to Pine Flat Reservoir; San Joaquin, North and Middle Forks San Joaquin Rivers, from their sources to Mammoth Pool; South Fork San Joaquin River above Florence Lake; and Merced, North and South Forks Merced Rivers were inventoried in 1982 by the Department of Interior as free-flowing rivers that had potential for inclusion into the National Wild and Scenic River System. In November 1987, Congress designated portions of Merced, South Fork Merced, Kings, South and Middle Forks Kings as Wild and Scenic Rivers.

The majority of these river segments are located in steep-walled canyons where little or no management activity takes place. Several of the areas are in Wilderness. Designation of the San Joaquin Rivers into the system will have little effect on Forest management. Some issues concerning hydroelectric and mining development exist. These management activities may adversely affect wild and scenic river designation. Until Congress acts on these designated river recommendations, no management activities will take place that preclude designation.

This Forest Service analysis is a recommendation that may receive further review and possible modification by the Chief of the Forest Service, Secretary of Agriculture, and the President of the United States. Final decisions have been reserved by Congress to designate rivers to the National Wild and Scenic Rivers System. Classification and boundary decisions have already been finalized concerning the Merced and Kings Wild and Scenic Rivers.

### 3.7 FISHERY RESOURCES

The Forest fish habitat includes 1,800 miles of streams and rivers, and 480 inventoried lakes. There is a diverse range of aquatic habitat types, from low elevation ponds in chaparral woodland to glacial tarns near granitic alpine ridgelines. Of the 1,800 miles of perennial streams in the Forest, 85% or 1,580 miles are estimated to contain fish, with rainbow trout as the dominant harvested species. Of the total length of streams supporting fish, habitat conditions are estimated as 28.4% high quality, 53.9% medium quality, 13.3% low quality and 4.4% unknown. Approximately 70% of the high and medium quality waters are located in wilderness areas.

Generally, habitat for trout are rated medium to high quality throughout the Forest. The small portions (13.3%) identified as low quality habitat are either localized areas where livestock are breaking down streambanks, loggers are harvesting timber, utilities have hydroelectric power developments, recreationists are

highly concentrated or certain low quality channel conditions naturally occur. This Plan provides measures that reduce conflicts between fish habitat and management of other resources.

The Forest's aquatic resources provide habitat for 31 species of fish. Only eight of the fish species occurring in the Forest are native. These native fish, except rainbow trout and salmon are nongame and warmwater species. Most Forest waters were barren of fish prior to man's transplanting activities starting in the late 19th Century. Currently Upper Kings River and a portion of South Fork Merced River are designated by California Fish and Game Commission as Wild Trout Streams. These river segments are managed without the introduction of catchable sized hatchery trout. Extensive interdrainage transplanting has resulted in the wide distribution of rainbow trout and other trout species.

Relative to streams and lakes in other parts of California, Sierra Nevada streams are low in productivity, have a short growing season and exhibit wide ranges in seasonal flows. Typically, Sierra Nevada streams flow through varied and changeable habitats such as meadows, granitic outcrops, bedrock cascades and falls, open floodplains, dense coniferous stands, expanses of barren bedrock and riparian communities.

Native fish of California, but not endemic to the Forest, are golden trout, Paiute cutthroat trout and Lahontan cutthroat trout. The two species of cutthroat trout are federally-listed threatened species that will be managed according to their respective Federal Recovery and/or State management plans, to avoid endangered status, and to assist in the complete recovery and delisting of the species. There are two populations of Paiute cutthroat trout and both are located in wilderness areas. Each population persists at a low but stable level which is a consequence of the naturally-occurring poor habitat of the occupied streams. Opportunities to conduct major habitat improvement projects are very limited because of the difficulty of transporting equipment and materials, an operational restriction within wilderness areas. There are no habitat improvement projects planned at this time. The two streams containing Lahontan cutthroat trout are in areas that have been intensively managed for timber. The Forest is conducting habitat improvement projects to help restore habitat in both drainages. 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.

Rainbow trout and brown trout are the most common and important fish used for recreation in the Forest. Catchable rainbow, brook and brown trout are planted by CDFG on a regular schedule during the recreational season in some Forest waters, usually next to developed campgrounds and arterial roads. The remaining Forest

streams support self-sustaining populations of trout. Many wilderness area lakes are aerially planted with fingerling size trout. Natural reproduction is usually limited to lakes with accessible inflowing and/or outflowing streams for spawning.

Coldwater angling, expressed as visitor days, is used as an index of intensity and demand. During 1983, an estimated 215,300 visitor days were spent on coldwater fishing. The majority of angling occurs throughout the Forest in the mixed conifer zone. The large streams appear to be the most attractive to anglers, although an increasing number of anglers are discovering that small perennial streams also support abundant numbers of trout. Demand for coldwater angling is expected to increase 1-2% annually during the next five decades.

There is limited opportunity to improve some of the streams with low quality aquatic habitat. Many of these sites are located in remote areas; habitats are small; summer flows are very low; and waters are nonproductive. About half of the streams with low quality habitat are in areas not subject to land and vegetation-disturbing activities, such as classified wilderness areas and steep rugged canyon streams. Low to moderate quality habitat, with the potential to improve from structural or non-structural management, is identified and prioritized annually for project completion. Approximately 100 acres or structures of fish habitat improvement is accomplished annually using this Plan.

Forest fish and wildlife management involves the following. (1) multiple use coordination with other functions, and (2) direct habitat improvement projects financed by (a) Protection and Maintenance (P&M) dollars, (b) Knudsen- Vandenburg (K-V) funds collected from timber sale receipts and/or, (c) other government or private sources, such as county fish and game fine collections, or short-term State proposition funds. Habitat improvement projects are identified on a continuous basis and are prioritized for completion based on the potential risk or benefit to the resource.

Extensive coordination with management of other resources, coupled with mitigation and enhancement measures, can achieve a moderate increase in fish habitat quality. This Plan offers direction that is intended to enhance the Forest fishery resource.

### 3.8 WILDLIFE RESOURCES

Variety in the Forest's flora and fauna reflects the variation in climate and terrain. Typical Sierra Nevada species are present, including two endangered wildlife species, six sensitive wildlife species, and nineteen sensitive plant species. The distribution of these species across the Forest is dependent upon habitat which changes through plant growth and succession, natural processes and management activities through time.

NFMA and the Secretary of Agriculture's implementing regulations (36 CFR 219.19) require the selection of Management Indicator Species (MIS) and the evaluation of the effects of alternatives on the viability and diversity of plant and animal communities. MIS is used to evaluate the effects of management on fish and wildlife resources. Species selected shall include where appropriate:

1. Threatened and endangered 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 that are commonly hunted, fished or trapped
5. Nongame species of special interest.

Population trends of MIS are monitored and relationships to habitat changes determined. Monitoring, where practical, is done in cooperation with State fish and wildlife agencies.

This plan provides for a viable population of all native and desired non-native vertebrate species and habitat contributing toward recovery of threatened and endangered species. Annually, approximately 2,000 acres or structures of wildlife habitat improvement is accomplished. Federally-listed threatened and endangered habitat is improved at a rate of 20 acres per year. Direct habitat improvement projects are financed by (a) Knudsen-Vandenberg (K-V) funds collected from timber receipts, (b) Protection and Maintenance (P&M) dollars, (c) private sources such as sportsmen clubs, garden clubs, Sierra Club and (d) other government sources such as county, fish and game collections, schools and state proposition funds.

### 3.8.1 Wildlife Species

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.

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.

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. Mule deer, black bear, two species of cottontail rabbits and the two species of squirrels are game animals in the Forest. Mule deer represent the

most important game species in the Forest. The Forest provides summer and winter range habitat for North Kings, San Joaquin, Huntington, Oakhurst and a portion of the Yosemite deer herds. Local herd populations have declined steadily since the 1950s and hunter efforts have decreased accordingly.

Sierra National Forest species which are classified endangered, threatened or sensitive according to the Endangered Species Act and the Regional Forester's Sensitive Species List include:

Endangered	Bald eagle, peregrine falcon.
Threatened	Lahontan cutthroat trout, Paiute cutthroat trout
Sensitive:	California spotted owl, goshawk, willow flycatcher, marten, fisher, Sierra Nevada red fox and nineteen Sensitive plants.

The Forest provides habitat for nine furbearers which are harvestable species under State Fish and Game regulation. 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 which are listed by the State of California as threatened, and five fully protected species of concern: river otter, marten, fisher, ring-tailed cat and badger. Four nongame species of mammals generate special management concerns because of their influence on timber management. The species are the beaver, porcupine, mountain pocket gopher and Botta's pocket gopher.

### Demand

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 seek wildlife to enhance their wildland experience in the Forest. Many just want to observe and photograph wildlife. Consumptive and non-consumptive demands for fish and wildlife will increase with human population expansion, but it is anticipated that non-consumptive demand will expand or grow faster.

### 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.

Bald eagles currently receive little special management attention because they inhabit the Forest during periods when conflicts with other management activities are limited. The construction of large, low elevation reservoirs for hydroelectric power generation and flood storage has altered the "riverine" habitat with their once thriving anadromous fish runs, to a 'flat-water' reservoir habitat. The introduction of warm water fish populations provides 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. Little improvement of habitat for wintering bald eagles is planned 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 other resource management activities.

### Peregrine Falcon

The peregrine falcon is a federally-listed endangered species. Endangered species status directs National Forests to protect critical habitat 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. Peregrine falcons nest on cliff ledges and protection of active nests should not conflict with other management activities. 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 to delist. A goal of 3 nesting pairs, to contribute towards the recovery effort, has been established for the Forest. 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 Kings River drainage in 1986, 1987 and 1988. Additional reintroduction efforts will be implemented in San Joaquin and Merced River drainages. The recovery efforts provide genetic interchange for birds being fledged from known eyries in Yosemite National Park and from successful recovery efforts conducted in Sequoia and Inyo National Forests.

### 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 threatened species. These species are discussed in the previous fishery resource section.

### 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. A network of 29 SOHAs has been established in the Forest to maintain the existing spotted owl range through clusters of nest sites, spaced 6 to 12 miles apart and linked to networks of other Forests.

Current management includes maintaining an inventory to determine occupancy of network SOHAs, identifying potential alternate SOHAs, 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 Forest SOHA network. They are: 1) no scheduled timber harvest, which includes 1,000 acres of currently suitable habitat plus 650 acres of replacement habitat, 2) even-aged timber management, which includes 1,000 acres of currently suitable habitat plus 1,650 acres of replacement habitat; 3) uneven-aged timber harvest, which includes 1,000 acres of currently suitable habitat plus 1,000 acres of replacement habitat. "No scheduled harvest" is adopted to assure the Forest meets the intent of the Regional requirements.

#### Goshawk

Goshawks nest widely in coniferous forest throughout the west. They typically nest in older dense stands of mixed coniferous forest with 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 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 nesting season and suitable climatic factors. Populations are probably limited by amount and distribution of suitable nesting habitat.

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 existing 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 stand or two parcels of 25 acres each composed of the nest stand and alternate nest stand. Because of current land allocations, the Forest predicts many goshawk territories will be larger than 50 acres. Active nest sites are to take priority over areas of non-use, thinning should not occur in nest territories and timber harvest activity is to be excluded from areas during nesting.

Current management includes completion of goshawk inventory, inventorying suitable habitat for nest sites, monitoring selected nest sites for occupancy and reproductive success and coordinating nesting habitat requirements with other resource management.

### 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 on the Forest since 1982.

Removal of critical willow assemblages by hydroelectric projects is reducing habitat for this species. In addition, preliminary field work by others suggest that livestock grazing near willow assemblages may be severely affecting willow flycatcher's breeding success.

Current management is to protect identified active nest sites through fencing or other means. The Forest supports many montane meadows with willow assemblages, however, not all are suitable. Completion of an inventory for the flycatcher will provide data for successful maintenance and enhancement of suitable habitat.

Opportunities to expand local populations of willow flycatcher could include: 1) complete a forestwide inventory of montane meadows which support willow assemblages and determine suitability for nesting, 2) establish willow assemblages in select meadows which currently do not support willows, and 3) exclude cattle from specific meadows with active nests.

### Marten

The marten listed as a sensitive species in Region 5 is common in the higher elevation of the Sierra Nevada. Habitat preference is mature and late seral stage forest, although they occasionally extend their foraging activities into meadows and talus slopes of the subalpine area during summer. Mature stands of timber are essential habitat, especially during winter. Because of this close dependency on forested habitat, marten distribution and abundance can be adversely affected by timber harvesting.

Martens are nocturnal, seldom active during the day. They are solitary as adults and pair briefly during breeding season. A diversity of forest communities is not only beneficial to martens, but to other mammals, birds and other vertebrates. Martens favor high elevation basins dominated by fir, montane brush and Jeffrey pine - mixed conifer associations are generally avoided.

Habitat needs are met by providing 7 suitable sensitive furbearer habitat areas (62,140 acres) and habitat linkage (4,180 acres) between habitat areas, adjacent Forests and Yosemite and Kings Canyon National Parks.

### Fisher

The fisher is listed as a sensitive species in the Forest Service's Pacific Southwest Region. It is an uncommon animal throughout its range and in the Forest prefers mid-elevation range from 4,000 to 8,000 feet. Habitat preference is similar to the marten which prefers multi-storied multi-species mature forest, late seral stage or large tree stages in dense mixed conifer, red fir and lodgepole pine habitat associations. They are active all year during day and night. The fisher is a solitary animal, roaming over a large home territory. It is as much at home in trees as on the ground. It is a tireless hunter, searching for and pursuing prey on the ground, in burrows and in trees. They nest in tree holes, rock slides, hollow logs and snags.

Habitat needs are met by providing 7 suitable sensitive furbearer habitat areas (62,140 acres) and habitat linkage (4,180 acres) between habitat areas, adjacent Forests and Kings Canyon and Yosemite National Parks.

### Sierra Nevada Red Fox

The Sierra Nevada red fox occurs in vegetation types similar to the 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)

### Other Species of Concern

#### Osprey

Ospreys are year-round residents in the Forest. Information regarding local osprey population levels is limited. One pair has traditionally nested at Bass Lake for many years. 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, impacts to riparian forest in the San Joaquin Valley, reduction of anadromous fish runs and introduction of pesticides into the food chain have all contributed to the relatively low numbers regionally and locally. 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. Introduction of warm water fish populations provides a year-round food supply that at least partially compensates for loss of winter salmon as a food source for both ospreys and bald eagles. All major reservoirs in the Forest provide suitable trees for construction of nests

Opportunities exist to enhance and increase nesting habitat which 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. Literature indicates the wolverine is uncommon in the Sierra Nevada and historically was never present in large numbers in the State. The wolverine inhabits "high country", mostly near or above timberline and wanders over a very large home range on both sides of the Sierra crest. The optimum habitat preferred by the wolverine is large tree stages with moderate to dense canopy in red fir and lodgepole pine forest and alpine meadows. The wolverine does not hibernate even during the coldest weather and spends most of its time in search of food. They are solitary hunters as adults and pair briefly during the mating season. They excavate a "den" or burrow under shelving rock or in logs, caves or snags.

Presently, Wilderness, RNAs and SOHAs contain the largest areas of suitable wolverine habitat consisting of mature and late seral stage forest with abundant snags, down logs and prey species

### Harvest Species

#### Mule Deer

Mule deer are the most important big game species in the Forest. Yosemite, Huntington, Oakhurst, San Joaquin and North Kings are the principal deer herds. Although a few animals occupy winter ranges throughout the year, each herd is predominately migratory. 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 a portion of winter range for the Yosemite herd.

CDFG data suggests deer population in the Forest, like many west-slope herds, has declined from a peak of approximately 35,000 to 40,000 in the mid-1950's to a current estimated low of 6,000 to 7,000 deer. Although the reasons for decline are not completely understood, predation, habitat degradation and loss, poaching, antlerless harvests 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 is expected to provide its proportional share of habitat to meet these deer herd goals. Deer herd management plans for the 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

Opportunities to help meet herd population goals include modifying, in the commercial forest zone, harvest unit sizes and reforestation practices in identified deer population centers and holding 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. Additional habitat enhancement schemes include broadening the low elevation front country prescribed fire program, regulating road use, providing more thermal and hiding cover, changing amount and distribution of seral stages, providing more roadside vegetation screening, and prescribing timber management activities to accommodate deer habitat objectives in summer range.

#### Resident Trout

Rainbow trout and brown trout are the most common and important fish used for recreation in the Forest. Catchable rainbow, brook and brown trout are planted in some Forest waters, usually next to developed campgrounds and arterial roads, by CDFG on a regular schedule during the recreational season. The remaining Forest streams support self-sustaining populations of trout. Many wilderness area lakes are aerially planted with fingerling size trout. Natural reproduction is usually limited to lakes with accessible inflowing and/or outflowing streams for spawning.

The majority of angling occurs throughout the Forest in the mixed conifer zone. The large streams appear to be the most attractive to anglers, although an increasing number of anglers are discovering that small perennial streams also support abundant numbers of trout.

Two streams in the Forest have been designated by the California State Fish and Game Commission as wild trout streams. These streams are the Kings River above Pine Flat Reservoir and the South Fork Merced River in Mariposa County.

#### 3.8.2

##### Forest Diversity

Managing for diversity is important for provision and maintenance of: 1) ecosystem stability, 2) biological variety, 3) fish and wildlife habitats, and 4) aesthetic values. 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

Diversity is evaluated according to three components: richness, evenness, and pattern

Richness - includes the number of different kinds of elements found within the planning area. Examples are individual species, plant communities, vegetative seral stages, and special habitat components such as snags, cliffs, hardwoods, and dead and down material.

The three broad ecosystems in the Forest are conifer forests, hardwoods and chaparral. Included within these ecosystems are riparian and grass vegetation types. All of the vegetation types, their successional stages, and their localized, special components, such as caves, talus slopes, rock outcrops, snags and down logs, provide habitat for a diverse array of fish and wildlife species.

The diversity of habitats in the Forest helps provide for the needs of about 346 species either seasonally or on a year-round basis. The wildlife includes 198 species of birds, 82 species of mammals, 22 species of reptiles, 31 species of fish, and 13 species of amphibians.

Three major coniferous forest types grow in the Forest including mixed conifer, ponderosa pine/Jeffrey pine, and red fir/white fir. Other conifer forest types include lodgepole pine, digger pine and subalpine forest. The total forested acreage in the Forest (productive forest with potential to provide at least 10% crown closure) is 562.9 M acres, which is 44 percent of the total land base.

While there are only three major coniferous forest types, these types are comprised of many different species with one species usually dominating. There are 15 different coniferous species occurring in stands throughout the Forest.

Broad-leafed trees comprise the hardwood ecosystem of the Forest. Hardwoods can be broken into several types: blue oak, black oak, live oak, and riparian woodlands. Hardwoods can be found among the mixed conifers and ponderosa pine types. Common species include blue oak, black oak, canyon live oak, and big leaf maple.

Black oak is found in pure stands or in association with conifers, usually appearing as a successional stage of a conifer type. Black oak is an extremely important hardwood type for wildlife. Canyon live oak is the most common species found in live oak woodlands. Interior live oak is another species found in the Forest. Both canyon and interior live oak occur on steep, rocky slopes. Over the years, cone-bearing trees, primarily white fir, incense-cedar, ponderosa pine, and sugar pine have

effectively competed with black oak. There are areas throughout the Forest where the conifer species have grown over the crowns of the black oaks. This trend can be reversed by selectively harvesting softwoods or by starting the successional process over with regeneration harvests. Wildfire has the same effect.

The riparian woodland grows where water runs intermittently or year-round. The most common species are alders, cottonwoods, and willow. An estimated 155,000 acres of riparian habitat is scattered throughout the Forest.

Chaparral also occurs throughout the Forest. A detailed description of the chaparral ecosystem is found in the Chaparral Section of this Chapter.

Approximately 80,200 acres of chaparral habitat occur between 2,000 and 4,000 feet in elevation in the Forest. This habitat is composed of dense stands of shrubs with little or no herbaceous understory. About 160 wildlife species either live full time in chaparral or use the habitat while migrating to and from higher elevation habitats. The Forest prescribes burning programs to rejuvenate brushfields for both game and nongame species that average about 2,000 acres per year. Recent wildfires have burned about 10,000 acres of this habitat increasing diversity of grasses and forbs for wildlife use.

Approximately 21,500 acres of annual grassland habitat comprised of a variety of annual grasses and forbs occupy lower elevations of the Forest. About 200 species are potential inhabitants of this habitat but few remain in it during their entire life cycle. This habitat can be improved for range and wildlife by periodic prescribed or natural fire. There are also about 5,100 acres of wet meadows.

In addition to the vegetated land, there are about 258.1 M acres of barren land comprised of rock or water.

Evenness - is the relative abundance of animals, habitat types, successional stages, and cover classes within the planning area. Evenness describes the relative extent to which the proportional abundance of these elements is uniform.

Evenness of both plant and animal communities can generally be approximated by the proportions of the Forest within each vegetation type. Table 3.01 shows the proportions of each major combined Forest vegetation type and provides a good estimate of evenness from a broad perspective. This Figure shows that 64 percent of the Forest is in the conifer vegetation type, 8 percent is occupied by hardwoods, 6 percent chaparral, 2 percent grass, and 20 percent is either barren rock outcrops or water.

**TABLE 3.01 - MAJOR VEGETATION TYPES BY PERCENT**

Vegetation Types	Percent
Conifer Forest Type	64
Non-vegetated Land	20
Hardwood	8
Grass	2
Chaparral	6
Total	100

Individual vegetation formation may be further categorized, based on plant size and density to evaluate the evenness component of plant diversity. This is referred to as "seral stage diversity".

Six wildlife habitat relationship (WHR) seral stages are identified. The current distribution of acres by seral stage and vegetation type found in the Forest is displayed in Table 3.13 of FEIS.

Conifer forests are the most dominant Forest vegetative formation. They mostly include mature trees over 50 feet tall with canopy closures that vary from 10 to 100 percent. Numerous species make up the conifer forests' ecosystem, and each has environmental parameters that effect its range and location.

Presently, an estimated 9 percent of the Forest vegetation is in grass/forbs/shrubs seral stage, 4 percent in pole/medium seral stage and about 87 percent large tree seral stage. Approximately 8 percent of the vegetation is in hardwood stands including blue oak and annual grass, digger pine and live oak, and black oak woodland.

Pattern - is the structural (vertical pattern) and spatial characteristics (horizontal pattern) of the different elements, e.g., vegetation layers, patch size and shape, and the spatial distribution of plants and animals adjacent to each other within the planning area.

The existing pattern of vegetation types, seral stages and special components vary widely across the Forest. The predominant areas of hardwoods occur in three locations: (1) at the lower elevations where there is scattered blue oak with an annual grassland understory, (2) between 500 and 2,000 feet in elevation where there is digger pine and live oaks with a shrub, annual grass and forbs understory, and (3) on the Mariposa Ranger District where there are dense to open stands of black oak in small scattered tracts within ponderosa pine/mixed conifer habitats. Concentrations of shrubs referred to as chaparral occur between 2,000 and 4,000 feet in elevation in a relatively narrow band separating the front country from forested areas. Of the productive forested land, approximately 142 M acres have been withdrawn from timber production because of wilderness designation. These timbered areas include lodgepole pine, ponderosa pine, red fir, and mixed conifer habitats. Approximately 70 percent of the productive forested timber land is

classified as tentatively suitable for timber production and 30 percent as unsuitable for timber production. In addition, the Limited-Timber Yield Prescription includes long rotations that provide for mostly late seral stage habitats. The combination of unsuitable timber land and Limited-Timber Yield Prescription allows for interspersions of intensively and extensively managed lands.

The size and location of the Forests' broad ecosystems will not change over time. Even the size and location of vegetation types will not change significantly. Within these types, wildfire and man, primarily through timber management activities and prescribed burning, alter the amount and pattern of structural diversity. This alteration of habitat is important to wildlife in providing a continuous rejuvenation of forest vegetation. Man has limited control over wildfire but can manage for a variety of successional stages using prescribed burning activities.

### 3.9 RIPARIAN AREAS

Riparian areas, deciduous zones within the Forest, are one of the most important wildlife habitats. Unique vegetation associated with riparian zones results in wildlife activity that is disproportionately higher than other habitats. Timber management, recreational development, hydroelectric projects, and livestock grazing can reduce riparian values. This Plan includes numerous standards and guidelines to protect riparian areas. Timber in RMAs will only be harvested to improve the riparian ecosystem or remove incidental timber for skyline corridors and roads.

Mountain meadows are similar in wildlife importance to riparian deciduous habitat. The principal management activities that occur in and around mountain meadows are also the same as those listed for riparian habitats. The Plan offers direction for protecting meadows.

### 3.10 SENSITIVE PLANTS

The Endangered Species Act of 1973 mandates 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 Service do not jeopardize continued existence of threatened and endangered species or result in destruction or modification of their critical habitat.

The Forest contains about 2,000 species of plants occupying 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 believed, are not

threatened by management activity, or were found not to occur in the Forest. The Regional Forester's list includes only those species known or reported, or highly 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 as revisions to the source documents are made.

Distribution of each sensitive plant species is unique, both geographically and ecologically. Management of our sensitive plants must be done on a case-by-case basis due to specific locations, potential threats and ecology of each species. Current Forest Service policy and direction as previously stated is in accordance with the Endangered Species act of 1973. The harshness, remoteness and inaccessibility of sites on which some species occur does provide some 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 on the Forest indicate a net reduction of sensitive plant species. As the Forest inventory (and inventories of adjacent public lands) reaches completion, we can expect further deletion from or addition to the sensitive plant list. Currently, the Forest inventory is of a resolution that 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. In most cases, ecological requirements for most of these taxa are not associated with the best timber producing areas, they occur in scattered locations, and generally are few in number. Some sensitive plants occur in very rocky habitats, while others occur in chaparral ecosystems. Conflicts with other resources are predicted to be few. Collomia rawsoniana (Greene), a Forest endemic with a limited range, occurs in riparian habitats, and has potential to constrain timber outputs within its range. Proposed hydroelectric development projects within its range will also be affected.

Below is a complete list of sensitive plants occurring in the Forest. The Forest will pursue status determination and long-term protection of all sensitive plants. Currently, sensitive plant surveys and field investigations are conducted prior to any ground disturbing activity in areas where they are known or suspected to occur. Avoidance or mitigation measures are included in project plans and Environmental Assessments.

Generally, sensitive plants in the Forest fall into three broad categories. They are

(1) Plants rare, but 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) Occurrence of plants confined to several populations or one extended population.

High Sierra evening primrose *	<u>Camissonia sierrae</u> <u>ssp. alticola</u>
Rawson's flaming trumpet *	<u>Collomia rawsoniana</u>
Congdon's sunflower **	<u>Eriophyllum congdonii</u>
Many-flowered fawn lily *	<u>Erythronium pluriflorum</u>
Yosemite ivesia	<u>Ivesia unguiculata</u>
Tree anemone * **	<u>Carpenteria californica</u>

(3) 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 ssp.</u> <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>
Tehpите jewelflower	<u>Streptanthus fenestratus</u>
Tehpите buckwheat	<u>Eriogonum</u> <u>prattenianum</u> var. <u>avium</u>
Kings River buckwheat *	<u>Eriogonum nudum</u> var <u>regirivum</u>

At this time, there are no plants in the Forest which are federally-listed as threatened or endangered. Merced River clarkia, Yosemite onion, Congdon's eriophyllum, 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). Tree anemone was recently listed as threatened by the same State agency. A species management guide has been prepared and approved and an Interagency Agreement has been established between the Forest Service and USDI Fish and Wildlife Service for Rawson's flaming trumpet (a Forest endemic species). This management plan and agreement affect Forest management within the range of the species, especially within designated essential habitat. A species management guide has been approved for Merced River clarkia. Additional Species Management Guides will be prepared in the future for all Forest sensitive plants as ecological and management information becomes available or is developed.

\* These eight sensitive plants are endemic to the Sierra National Forest.

\*\* These sensitive plant species are officially listed by the State of California.

### 3 11 RANGE

Annually about 37,000 AUMs of grazing are realized in the Forest. The largest amount of forage is grazed by cattle with a significant portion used by recreation pack and saddle stock, commercial outfitter operations and Forest Service administrative stock. Presently, sheep are not grazed in the Forest. About one-third of the primary range area is located below 4,000 feet in the annual grass forage zone. The balance is composed mainly of widely scattered, wet and dry meadows at higher elevations and transitory range in the commercial forest zone. Grazing capacity of meadow areas is generally fully obligated, with little or no opportunity for increased use. However, significant increases in grazing is possible in the lower elevation annual forage zone, by taking advantage of surplus forage generated through the chaparral management program, and by implementing improved systems of grazing.

Condition and trend measurements from past years indicate most primary range lands are in fair or better condition, with an improving trend. In past years poor conditions resulted from overuse. *Trifolium bolanderi* is a sensitive plant which occurs in meadow habitats. It has been grazed by both sheep and cattle for over 100 years. Pacific Southwest Experiment Station has initiated a five year study to determine the effects of defoliation, including the effects of livestock grazing. Of the limited rangeland in poor condition, monitoring has indicated that some soils are incapable of supporting increased forage production, even with special treatment.

Allotment Management Plans will be used as the vehicle for ensuring protection of riparian areas from livestock impacts. Continued utilization of positive measures such as salting, herding, water developments, fencing, and riding when the opportunities exist, will be used to improve livestock distribution and minimize impact to riparian areas. If mitigation is unsuccessful in preventing unacceptable resource damage to riparian habitat, as a last resort, measures will be taken to reduce or eliminate livestock use in affected areas.

### 3.12 TIMBER

The forested land base, prior to analysis for capability, availability and suitability is about 563,000 acres. Timber land occurs in four major forest types: ponderosa pine, mixed conifer, red fir and subalpine.

Ponderosa pine, ranging from 2,500 to 3,500 feet in elevation, occurs in pure stands or with varying mixtures of incense cedar and hardwoods. The average timber site is Dunning Class II, productivity ranging from 85-119 CF/acre/year.

Mixed conifer, composed of mixtures of ponderosa pine, Jeffrey pine, sugar pine, white fir and incense cedar, dominates the mid-elevation zone up to 6,000 feet. The average timber site is Dunning Class II, productivity ranging from 85-119 CF/acre/year.

Red fir, dominant at the 6,000-8,500 foot level, is found in pure stands or in mixtures with white fir. Sugar pine, Jeffrey pine and lodgepole pine also occur in this forest type. The average timber site is Dunning class III, productivity ranging from 85-120 CF/acre/year.

Subalpine forest, present above 8,500 feet, is characterized by stands of lodgepole pine interspersed with occasional stands of western white pine, mountain hemlock or white bark pine. Average timber site is Dunning Class V, the least productive category in the forest.

Located in the foothills below 2,500 feet is a fifth forest type, hardwood-grassland, which yields an occasional fuelwood harvest.

The tentative available and suitable timber land is 393,700 acres. This is all forest land outside of Wilderness areas, except for 18,600 acres of forest land not deemed capable of producing above 20 CF/acre/year or not assured of being restocked within five years. The Forest Plan advocates that timber management should be practiced on 328,900 acres. These acres are further subdivided into three regulation classes. Regulation Class I land, containing 107,100 acres, are managed for full-timber production. Regulation Class II land, with 65,100 acres, are managed for modified-timber production. They include key deer areas and partial retention visual quality areas. Regulation Class III land, applying to 156,700 acres, are managed for limited-timber yields. They include unstable soils and retention visual quality areas. Also, there are Regulation Class IV land, containing 64,800 acres, managed to provide custodial protection with no planned timber harvest.

The average annual number of acres to be regenerated within this planning period is 2,970. Intermediate and selection harvest will occur on an additional 4,400 acres. Total annual yield is estimated to be 88.0 MMBF.

Two management methods are used to regulate harvesting of timber resources, uneven-aged and even-aged management. Uneven-aged management results in trees of different ages intermingled throughout a stand. Even-aged management results in trees in a stand being essentially the same age. The current Timber Management Plan prescribes even-aged management, but both methods are used. Considering silvicultural characteristics of the trees, composition 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 this Forest and adjacent National Forests is the only long-term supply for the local wood products industry. This Forest provides 20 to 25% of the lumber manufactured in the San Joaquin Valley. Interest in biomass as an energy source is increasing. Annual demand for woody material for home heating purposes has decreased slightly over the past 2 years, with an estimated 23M cords of wood being removed from the Forest.

3.13  
INTEGRATED PEST MANAGEMENT

Insects, diseases, plants (weeds) and animals can cause damage that interfere with attaining management goals. When they do, they are considered pests and are managed under an integrated pest management approach. This approach can include regulatory, biological, chemical, mechanical and silvicultural treatments. Vegetation management along with salvage and hazard tree removal offers the best opportunities to reduce pest impacts, which are currently at relatively low levels in the Forest.

3.14  
SOILS

Current management is directed toward implementing practices designed to retain soil stability and maintain site productivity. Direction is also to maintain a watershed monitoring effort which evaluates effects of ground disturbing projects. Monitoring determines if soil management objectives are achieved, and if productivity of the soil resource is not substantially or permanently impaired.

Approximately half of the Forest soils have developed in place from granitic rock while the remaining half is divided between metamorphosed, sedimentary rocks, glacial deposits or volcanic flows.

According to the soil survey of the Forest, soils can be divided into four productivity groups: high, medium, low and unproductive. There are 200,500, 350,000 and 272,000 acres, respectively. Remaining Forest acres fall into the unproductive category.

Productivity of forest soils can be lost through erosion, displacement or compaction.

3.15  
WATER

Nearly all of the 2.6 million acre/feet of water yielded from 28 National Forest System Watersheds in the Forest are used off-Forest for irrigation in the San Joaquin Valley. Currently, the total use of water in the Forest is about 5,985 acre/feet. An additional annual need of 867 acre/feet is projected.

The most important uses of water in the Forest are nonconsumptive and include lakes, streams and reservoirs that provide fishing, swimming, boating and other water-related activities. Presently, 19 hydroelectric projects are operating. Two projects are in the process of FERC relicensing, and five projects are proposed and in the planning process. Although hydroelectric power production is considered a nonconsumptive use, annually about 41,000 acre feet is lost to evaporation from reservoir surfaces.

Currently, 98% of the water from the Forest meets State and Federal water quality objectives. Increases in land disturbing activities, such as timber harvesting and road building, increase the potential for lowering water quality. Water quality is still preserved by the application of Best Management Practices.

About 452 acres at 58 specific locations are identified as needing watershed rehabilitation.

Present management direction specifies a minimum riparian protection zone of 100 feet on each side of all perennial streams, standing bodies of water and wetlands. Approximately 155,000 acres of Riparian Management Area are located within the Forest. Intermittent and ephemeral streams are managed under Streamside Management Zone procedures.

The Streamside Management Zone (SMZ) concept prescribes the BMP needed to meet water quality objectives. SMZs are discrete areas adjacent to streams or lakes that are managed primarily to meet water quality objectives. Riparian areas along streams are included within the Streamside Management Zone. SMZs help protect water quality and riparian areas and are delineated based on stream class and associated sideslope gradient. The SMZ determination process is described in FSH 2509.22 Sierra Supplement #1. (See Appendix V in FEIS)

TABLE 3.02 - SMZ WIDTH (FEET) BY STREAM CLASS, GROUND COVER AND SLOPE GRADIENT

Stream Class	Percent Cover	(Percent sideslope)				
		30	40	50	60	70
		(Total width in feet)				
I	50	100	130	160	190	220
II	50	75	105	135	165	195
III	50	50	80	110	140	170
IV	50	25	45	65	85	105
V	50	Variable				

Opportunities to significantly increase water yields to meet off-Forest demand are limited. Increases can be realized from vegetative modification projects, such as converting brush and trees to grass. The best opportunities for increasing water yield occurs in highly productive timber areas. The maximum yield that can occur, assuming vast areas are clearcut, is 2.7 MM

acre/feet annually, or approximately 5% over base year yield. As trees return to the site, water yield will decline to its original amount over a 50-year period.

### 3.16 MINERALS

About 180 reported deposits and/or prospects containing minerals of potential economic value occur within the Forest. Nearly all of these prospects have been explored and some have been past producers. Strawberry tungsten mine and a few gold mining operations in the Merced River area are currently being explored or are in production. Seven minerals are on the National Critical Minerals list. Laws and regulations pertaining to mining are summarized in Appendix M of the FEIS.

A number of mineral withdrawals occur within the Forest. Withdrawals protect administration, recreation, natural history sites, experimental areas and scenic corridors from impacts which might be generated by mineral entry and development. In 1984, mineral entry rights for 527,938 acres were withdrawn in wildernesses formally classified under the 1964 Wilderness Act. Currently 550,628 acres are not open to mineral entry. PL 94-579, passed November 21, 1976, requires a Congressional Review and Rejustification of all withdrawals, except those previously approved by Congress.

### 3.17 LANDS

The Forest's administrative boundary encloses 1,395,553 acres, of which 109,493 acres are non-federal. The private holdings were patented under various laws, such as Timber and Stone Act, Homestead Act or 1872 Mining Act. The pattern of private holding is generally irregular and scattered along the Forest's western boundary at the lower and mid-elevations.

Approximately 1,000 miles of property lines require marking and posting to acceptable standards and about 3,500 property corners need to be monumented. Opportunities to consolidate holdings are diminishing due to accelerating fragmentation of private land for recreational homes, urban-type developments or speculation.

There are about 475 land use permits. Since 1977 an average of 45 new permits each year have been issued. This rate is expected to continue over the next several years. Most permits have been generated by power projects or private residential developments for roads, water transmission and power and telephone line rights-of-way. In addition, about 25 short-term permits are issued each year for apiaries, movies, television shows and other purposes.

The objective of the Forest's land adjustment program is to acquire or exchange land which helps to consolidate scattered parcels for more efficient management. This will reduce management costs, facilitate protection, development, and management of Federal and adjacent non-Federal lands, and increase production of resource commodities.

### 3.18 HYDROELECTRIC DEVELOPMENT

The Forest contains ideal terrain and climatic conditions for development of hydroelectric resources and therefore, ranks high in planning considerations of future developments by power companies.

There are 19 major projects providing an installed capacity of 2,300 mw. An additional generator of 35 mw capacity is being installed in Powerhouse No. 3 in the Big Creek complex. The Kerckhoff Project, with the powerhouse located outside Forest boundary, has an installed capacity of 34 mw.

There are 9 potential major hydroelectric projects for which preliminary permits are on file with FERC. Their final project boundaries will include an estimated 16,000 acres if all nine projects are constructed. Numerous minor projects are proposed throughout the Forest that may yield additional 5 mw.

For the 9 proposed projects, no transportation or utility corridors are identified or designated. If concentrations of existing and/or planned facilities dominate the use and management of an area, the need to formally designate corridors will be re-examined.

The processes currently being followed in hydroelectric developments are given in Appendix O of the FEIS. Over 150,000 acres of the Forest's land are encumbered with power withdrawals. Typically, large tracts of land are withdrawn to protect power values for potential projects. However, the area needed to operate and maintain a project, once constructed, is considerably less than the original withdrawal. The excessive amount of withdrawn land hinders Forest management by requiring that easements, ingress-egress grants or land exchanges, be executed only after FERC finds that power values are not impaired. It appears that over 120,000 acres of withdrawals are excess to the amount of land needed to accommodate existing and potential hydroelectric projects.

### 3.19 CULTURAL RESOURCES

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

The Forest contains much evidence of the original habitation of this area by Native Americans, and later use by early timber, grazing, hunting, trapping, homesteading and exploration activities. Over 3,000 sites have been identified, but probably not more than 10% of the Forest has been reliably inventoried

In the past, remoteness of National Forest land provided protection to cultural resources. With improved access and increasing use, damage to areas and items of historic and scientific interest has increased significantly. As a result, the Forest Service has begun an active program of cultural resource management. This program integrates cultural resource management with other multiple use management. Three objectives have been identified to assist the Forest in integrating cultural resource management with other multiple use management. These are 1) meet legal requirements for inventory, evaluation and interpretation of cultural resources, 2) assist local Native American communities in continuation and enhancement of their cultural traditions, and 3) interpret culture history of the Forest for the public. To accomplish this, the Forest needs to manage and protect cultural resources from damage. Activities and natural occurrences that can damage properties need to be monitored, and, if necessary, preventive and mitigative measures taken.

A cultural Resource Overview has been prepared. This report discusses archaeology, ethnography, and history of the Forest. Major deficiencies in the cultural resource data base are also identified. Current and future work are directed toward answering questions important for removing these data deficiencies.

Most of the inventory and evaluation of cultural resources has taken place within the timber management zone. Little inventory has taken place in management areas such as Wilderness, although such areas will require increased cultural resource management emphasis in the future.

Avoidance of cultural resources is preferred, however, a system of mitigation is available for situations where impact cannot be avoided

### 3.20 SPECIAL AREAS

Existing and potential special areas in the Forest are described in this section. In most cases, special areas are administratively designated (in contrast to legislative designations, such as Wilderness or Wild and Scenic Rivers) to be set aside or protected for a specific purpose.

#### 3.20.1 Special Interest Areas (SIA)

An SIA is designated because of its unusual or outstanding scenic, cultural, scientific, natural or other unique characteristics meriting special attention and

management. They are managed to protect resources and, where appropriate, foster public uses and enjoyment of their significant values. Presently, there are three designated SIAs in the Forest - Courtright Intrusive Contact Zone Geological Area, Kings Cavern Geological Area, and Carpenteria Botanical Area. These three areas and some additional areas which are considered for designation as special interest areas are briefly described here

Existing:

- a. Courtright Intrusive Contact Zone Geological Area - This 11 acre area, located along the crest of a barren ridge, contains a variety of bedrock features characteristic of intrusive granite contacts in the Sierra Nevada Range. It is located at the south end of Courtright Reservoir on Helms Creek Tributary to North Fork Kings River.
- b. Kings Cavern Geological Area - This is a network of caverns and related features within a marble unit covering 388 acres of the Lower Kings River Roof Pendant. It is accessible by a trail and is located south of Wishon Reservoir along North Fork Kings River.
- c. Carpenteria Botanical Area - This 500 acre area was established for protection and study of the sensitive plant, Carpenteria californica. The area is located along Highway 168 near Big Sandy Bluff.

Established:

- a. Nelder Grove Historical Area - This 1,434 acre area was set aside in 1972 for preservation of giant Sequoia. The area is located 2 miles east of Sugar Pine on Highway 41. It is also rich in early logging history and prehistoric habitation.
- b. McKinley Grove Botanical Area - This 520 acre area was set aside in 1963 for preservation of giant Sequoias. The area is located 12 miles southeast of Shaver Lake in the vicinity of McKinley Grove Campground and picnic area.
- c. Dinkey Creek Roof Pendant Geological Area - This 640 acre area is located east of the town of Shaver Lake. It represents a metamorphosed remnant of sedimentary rocks predating intrusion of Sierra Nevada granitic bodies. Five different rock types are exposed, revealing details of folds and faults resulting from mountain-building episodes.
- d. Devils Peak Botanical Area - This 1,600 acre area is located just north of Signal Peak Lookout. It will be established for the protection and conservation of three sensitive plants; Yosemite onion, Congdon's woolly sunflower and Congdon's bitterroot.

### 3 20.2 Research Natural Areas (RNA)

Establishment of RNAs recognizes the need to promote and protect natural diversity in all forms. RNAs typify important forest, shrubland, grassland, alpine, aquatic, and geologic types and other natural conditions that have special or unique characteristics of scientific interest and importance. RNAs are for non-manipulative research and education. There are two designated RNAs in the Forest; Backbone Creek and San Joaquin Experimental Range. Two additional areas are recommended for classification; Bishop Creek Pacific Ponderosa Pine and Home Camp Creek Red Fir/White Fir.

RNAs serve many purposes including: 1) opportunities for the study of plant succession and other biological and physical phenomenon over long periods of time, 2) a baseline data source for monitoring changes in natural processes and systems brought about by man's activities, and 3) "benchmark" values to aid managers in their resource management activities.

#### Existing

- a. Backbone Creek RNA - This 430 acre area is located near the Carpenteria Botanical SIA and was designed for protection and study of Carpenteria californica.
- b. San Joaquin Experimental Range RNA - This 80 acre parcel lies within San Joaquin Experimental Range, approximately 20 miles north of Fresno along Highway 41. It is dedicated to research of the blue oak-digger pine ecosystem.

#### Recommended:

- a. Bishop Creek Pacific Ponderosa Pine RNA - Containing 1,400 acres, this RNA will be dedicated for research of the Pacific Ponderosa Pine ecosystem. It is located between South Fork Merced River and Yosemite National Park.
- b. Home Camp Creek White Fir - Red Fir RNA - This 1,200 acre area will be dedicated for research and study of the red fir/white fir ecosystem. It is located within Kaiser Wilderness.

### 3.20.3 Experimental Forest

Experimental forests occur throughout the National Forest System for field studies and demonstrating forest management practices. The 3,200-acre Teakettle Creek Experimental Forest, located 4 miles southwest of Wishon Reservoir, was designated in 1955 for watershed research. Vegetation consists primarily of virgin red and white fir. It is administered by the Pacific Southwest Forest and Range Experiment Station.

### 3 20.4 Experimental Range

Experimental ranges occur throughout the National Forest System for field studies and demonstrating range management practices. The San Joaquin Experimental Range, located in the Sierra Nevada foothills north of Fresno, was designated in 1934 for range research purposes and is under the direction of the Pacific Southwest Forest and Range Experiment Station. The area contains 4,580 acres.

### 3.20.5 Kings River Special Management Area

In 1987, Kings River Special Management Area was designated by Congress to provide for public outdoor recreation use, and to protect the area's natural, archaeological, fish, wildlife and scenic resources. The area will be referred to as a "Special Management Area." This area of approximately 49,000 acres is within the Sierra and Sequoia National Forests, and shall be administered by the Sierra National Forest.

### 3.20.6 National Natural Landmarks

This program provides a mechanism for identifying, protecting and maintaining sites, which have unique scenic, geological or botanical features, with National significance in a particular geographical region. If designated, they will be managed to ensure that such features will not be altered. No site has been designated or nominated for Registered National Natural Landmark status in the Forest.

### 3.21 TRANSPORTATION AND FACILITIES

The Forest's transportation system consists of nearly 2,550 miles of Forest development roads. Functionally, they are divided into three classes: arterial, collector and local roads.

Arterial roads (265 miles) are primarily two-lane all-weather roads. They service large land areas and usually connect with public highways or other Forest arterial roads to form a network of primary travel routes. Location and standard are often determined by a demand for maximum mobility and travel efficiency, rather than specific resource management service. They are usually developed and operated for long-term land and resource management purposes and constant service.

Collector roads (500 miles) are two-lane or single-lane with intervisible turnouts. They service smaller land areas and are usually connected to an arterial road or public highway. They collect traffic from local roads or terminal facilities. The location and standard are influenced by both long-term, multi-resource service needs, as well as travel efficiency. They may be operated for either

constant or intermittent service, depending on land use and resource management objectives for the area served by the facility.

Local roads (1,785 miles) usually access a single resource terminal facility, such as a log landing, a campground or a trailhead. The typical local road is single-lane, with native soil surface that follows the terrain and requires low driving speed. Local roads usually connect with a collector road, but may tie directly with arterial roads or public highways. The location and standards are usually controlled by a specific resource activity rather than travel efficiency. *Local roads may be developed and operated for either long or short-term service.*

The planned system is 80% in place, with completion anticipated within 50 years. Some of the older sections are substandard and are improved as opportunities arise, mainly drainage and surface improvements, to prevent erosion and siltation or improve economic efficiency. *Improvements of standards will continue following completion of the system.* Some roads are temporarily closed to prevent damage to the surface under certain weather conditions, during periods of high fire danger, or for wildlife considerations.

Forest Highways are another integral part of the transportation system. They are segments of the State and County road system, generally serving areas of heavy public ownership. To ensure adequate access and mobility between the major road system and forest development roads, Congress established funding separate from ordinary tax sources for these roads. The Forest Highways are a cooperative venture between the Federal Highway Administration, CALTRANS, affected counties and the Forest Service. The Forest currently has 60 miles of road designated as Forest highways. Additionally, 185 miles of county roads lie within the Forest and supplement the Forest system.

Another aspect of the Forest Road System which is emerging is Scenic Byways. Scenic Byway routes showcase scenic and historical values of the National Forest. They are to be properly identified by road signs and on maps, and are to be safe for passenger car travel. The Sierra Vista Scenic Byway has been designated in the Forest.

In the Forest, there are 6 leased and 26 government-owned sites with 193 permanent administrative structures with an appraised value of \$12 million. About 75% of these buildings are 36 years old or older.

### 3.22 AIR

The Forest is experiencing increasing impacts from air pollution. Symptoms of smog diseases are widespread in the southern Sierra Nevada Range. In addition, visibility and scenic quality in the foothills and mountains is often impaired. The goal of the Clean Air Act is to remedy

industrial-based impairment and to prevent any future impairment in Class I (Wilderness) areas. The Forest's prevailing downwind location from major pollution sources makes attainment of the CAA goal difficult. The primary source of air pollutants is the San Joaquin Valley and, possibly the San Francisco Bay area. Oxidants generated in urban areas are carried by prevailing air currents into mountain areas, where pollution levels higher than urban areas have been recorded.

The potential for acidic deposition (pH 5.6) resulting from nitrous and sulfurous pollutants is a major concern. *In the state of California, research has shown that acid rain may be a relatively rare phenomenon, while dry acid deposition is a constant process.* The Forest intermittently monitors the pH of various waters in conjunction with standard water quality monitoring programs.

Forest Service activities, such as fuels reduction and vegetative manipulation, use fire to dispose of woody materials. Such activities may cause short periods of reduced air quality from particulates and aerosols. Timing of prescribed fire is planned to limit or exclude smoke from sensitive areas. Burning is accomplished under conditions specified by the Air Resources Board.

### 3.23 PROTECTION

Fire suppression policies initiated early in this century have allowed vegetation to become dense and hazardous. Activity-caused fuels left on the ground until recent years constitutes additional fire hazard. Even though burned acreage has been reduced over the years, fire intensities and suppression costs have increased from fuel buildups. *This, plus increasing public use, raises potential risk of resource losses to high levels.*

Changes in resource management objectives and ever increasing costs of fire suppression resulted in modification of the fire exclusion policy in 1978. The current Forest Service objective in fire suppression is to confine or control wildfire in the most cost-effective manner, while still meeting land management objectives.

Fuel reduction and completion of the front country fuelbreak system are high priorities in chaparral areas. Fuel reduction will also be highly beneficial to other resources.

An average of 171 fires/year has caused an average annual fire loss of 2,200 acres. These burned acres have had an adverse effect on resource outputs, especially timber yields. The cost of suppressing the fires, plus the value of resources lost, annually exceed \$1.8 MM. The historic level of funding for both fuel reduction and the fire suppression organization is inadequate to protect the resources at stake.

## Chapter 4.0 – Management Direction



## 4.0 MANAGEMENT DIRECTION

### 4.1 INTRODUCTION

This chapter describes management direction that will guide administration and use of Sierra National Forest until the Forest Plan is amended or revised. Direction is used by Forest personnel to achieve desired results. Direction also informs the public and other agencies of future programs.

The Forest is guided by direction from numerous sources. Laws passed by Congress, such as the National Environmental Policy Act, Threatened and Endangered Species Act, and others provide direction for certain aspects of management.

Additionally, the Forest Service has developed regulations and policies for management of resources in response to legislation or management needs. This direction is contained in the Code of Federal Regulation and Forest Service Manuals and Handbooks. They cover a wide range of direction for managing Forest resources.

At the National level, the Resources Planning Act gives broad direction. At the Regional level, the Regional Guide gives direction for management as well as target levels of output for various resources in each National Forest.

The Forest continues to be guided by laws, regulations, policies, and guidelines mentioned. This Forest Plan supplements, but does not replace direction from these sources. The Plan generally does not restate this direction, except where it was felt necessary to clarify treatment of an issue or concern.

The first level of direction in the Plan are Forest Goals and Objectives (Section 4.2). Goals and objectives provide broad, overall direction for type and amount of goods and services the Forest will provide in the future. This is followed by a discussion of Future Condition of the Forest (Section 4.3). Next are general Management Prescriptions (Section 4.4) and Management Standards and Guidelines. (Section 4.5)

Management Standards and Guidelines more specifically describe how Forest Goals and Objectives will be achieved and set minimum conditions that must be maintained while achieving the Goals and Objectives and adhering to policies.

Finally, Management Area prescriptions, practices, outputs and activities are described in Section 4.8. These descriptions are preceded by tables summarizing forestwide outputs and activities and prescription acres by Management Areas.

Resource outputs, activities and environmental changes described in the Plan represent anticipated results of Plan implementation. Differences can be expected to occur between what is planned and the results. The most important differences that may occur are included as monitoring items in Chapter 5. That chapter explains the way monitoring is used to make adjustments in the Plan to achieve desired results.

Through annual budgeting and work planning processes, management direction will be turned into visible results. These processes allow for annual adjustments to be made within the overall Plan direction to reflect current priorities. The degree to which the Plan can be implemented will depend to a large extent on appropriation of funds by Congress and distribution to the Forest through budget procedures.

Project environmental analyses will be tiered to the Plan Environmental Statement (40 CFR 1508.21)

### 4.2 FORESTWIDE 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 ROS element maps.
2. Manage wilderness to meet recreational, scenic, educational, conservational and historic uses, as well as preserving 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 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 present diversity of species
10. Identify 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 providing for 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 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 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 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 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 air quality is compatible with federal, state and local laws, including a program that achieves the Clean Air Act responsibilities.
  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 landowners.
  29. Encourage use of the Forest by disadvantaged, handicapped and minority persons.
  30. Follow and pursue intent of the Civil Rights Act to provide equal employment opportunities for all employees on the Sierra National Forest while increasing average grade of women employees and percentage of minority group representation, and ensure that no person is denied participation or benefits of any program or activity of the Forest Service. Strengthen rural economies by implementing 1990 RPA rural development policies.
  31. Maintain, on a continuous basis, Watershed Improvement Needs (Conditions) Inventory (WIN).
  32. Inventory and map riparian areas. This effort will allow for identification of areas to be protected and will identify watershed restoration needs.

#### 4.3

#### FUTURE CONDITION

##### 4.3.1

##### Forest Theme

The Forest Plan represents a balanced management program with a slight decrease in some market resources over present levels. Dispersed recreation and wilderness use 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 habitat will be maintained at about current levels while considerable amounts of late seral stage wildlife habitat will be replaced by regenerated stands.

##### 4.3.2

##### Social Condition

The ASQ may not be sufficient to ensure continued operation of all existing local sawmills. If one of the existing sawmills closes, there will be a loss of opportunity for local employment.

Current trends in population growth will probably continue at present rate. This will increase Forest related recreational activities. Additional service jobs will be generated within local communities. Since a good portion of recreationists come from outside areas, local communities will benefit from increased revenue.

Signs and brochures will be translated into other languages, where necessary. International symbols will be used to reduce multilingual signing. Field employees with bilingual skills will continue to be a necessary component for good management.

#### 4.3.3 Economics

The total annual budget needed to implement the Forest Plan is \$23.1 million. This will result in reduced returns to the U.S. Treasury and lower 25% receipt shares to the three-county area. There will be fewer jobs and income in the local community. Present net value and benefit/cost ratio will be lower than current level.

#### 4.3.4 Recreation

There will be a moderate increase in the number of developed sites to accommodate increased use. Some new development will be done by existing commercial permittees and/or licensees and through appropriated dollars as a requirement for new or relicensed water projects. Development emphasis will be in high use areas and in the Rural and Roaded Natural Recreational Opportunity Class zones. Full service management will be provided in most developed sites. Existing sites will be rehabilitated. Some additional OHV routes and areas will be designated where cross-country travel was previously allowed. Forest Plan implementation will also include development of a new Forest OHV Plan which will designate an OHV route system and contain management direction from the Forest Plan. The OHV Plan will be completed eighteen months after the Regional Forester signs the LMP Record of Decision. This new plan replaces the 1977 OHV Plan. Developments such as parking lots, sanitation facilities, marked trails and on-site supervision will be added to facilitate snow activities.

Outdoor recreation emphasis will provide a wide spectrum of recreational opportunities. The ROS class objectives element map provides a picture of the mix of opportunity classes the Forest will strive to maintain or reach under this Plan.

The Forest trail system will expand moderately, using new construction and reconstruction, with more intensive maintenance and management practices of the system provided to contribute toward meeting outdoor recreation demand. The historic French Trail from near Millerton Lake to the Pacific Crest Trail is in the process of being reconstructed. Also, small undeveloped sites

used for camping will receive more intensive management and maintenance to assure a quality dispersed recreation experience.

Visitor information and interpretative facilities will expand. A full range of services will be provided at major recreational use centers, with emphasis on dispersed recreation opportunities.

#### 4.3.5 Visual Resources

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

#### 4.3.6 Wilderness

There are 527,938 acres dedicated to wilderness. Trail rehabilitation will continue, being completed before 2010, with emphasis on high-use trails and those that disperse use. Two types of trails are planned: trails and paths.

Some Wilderness River segments of the San Joaquin River have been recommended for inclusion in the National Wild and Scenic River System. Monarch Wilderness River segments of Middle Fork Kings River have already been designated WSR. Vegetation will be returned to a more natural condition, through use of prescribed or natural fire, reducing fuel levels accumulated during the period of fire exclusion.

#### 4.3.7 Wild & Scenic Rivers

River segments totaling 82.5 miles will be managed as part of the National Wild and Scenic River System. This includes 70.0 miles classified as Wild, 2.0 miles as Scenic, and 10.5 miles as Recreational. Nearly 26,400 acres will be included in these river corridor management classifications.

Studying metasedimentary rocks, photographing the local flora in riparian zones within the corridor, whitewater rafting, picnicking, swimming, fishing, walking/hiking, viewing natural scenery, camping and studying several historic sites is expected to increase.

Some current and potential uses like mining, hydroelectric development and major facility development will be foreclosed or curtailed for some river segments. The segments affected will depend on location and extent of a future activity. Operations on valid, existing mining claims will continue. Mining on Recreational or Scenic segments may be restricted from designated segments. Major hydroelectric development

will be forgone on rivers designated as Wild/Scenic where no previous developments exist. Facility construction will be implemented within Scenic/Recreational river segment designations commensurate with existing uses and conditions.

#### 4.3.8

##### Fish, Wildlife, and Sensitive Plants

The Forest program of direct habitat improvement will annually treat 2,000 acres of wildlife habitat and 100 acres of structures of fish habitat. Habitat improvements for threatened and endangered species will continue near present annual rate of 20 acres. A forestwide program will be implemented to identify target fish and wildlife species and long-term habitat objectives for each Class 1 watershed and individual planning compartment.

Activities designed to enhance habitat for stream dwelling resident trout will involve structural and nonstructural treatments. Structural improvements may include watershed stabilization through streamside fencing, instream cover improvements, fishways and fish screens, construction of migration barriers, removal or relocation of roads, stream bank stabilization, control of water level fluctuation, and construction of water bars and culverts to retard or direct water runoff.

Nonstructural improvements may include improving quality of spawning gravels, removal of stream barriers, control of fish or aquatic plant populations, control of human access and fishing pressure and enhancement of riparian vegetation.

Activities designed to enhance warm and cold water lake fisheries will also involve structural and nonstructural treatments. Structural improvements may include fish cover developments, shoreline stabilization, migration barriers and structures to control water levels in lakes. Nonstructural improvements may include fish population control, aquatic plant control, enhancement of riparian vegetation and lake fertilization.

The Forest will strive to establish and maintain three breeding pairs of peregrine falcons. Habitat will be maintained for the current population of 5-10 wintering bald eagles. Twenty-nine California spotted owl habitat areas with no scheduled timber harvest will be maintained in the Forest. A goshawk survey will identify a network with an average of one nest territory per 18 square miles of suitable habitat. Timber harvest strategies will be modified to improve deer habitat in 75% of identified population centers and holding areas within the commercial forest. All federally-listed threatened and endangered species will be managed in accordance with their recovery plans. The Forest will develop and implement management practices to ensure sensitive species do not become threatened or endangered because of Forest Service actions.

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

Management of all perennial and many intermittent streams will emphasize maintenance of water quality as well as preservation of riparian habitat values for fish, wildlife and other dependant resources. The goal of managing riparian areas will be to maintain and improve existing forestwide conditions over time. When new hydroelectric developments are proposed or relicensing occurs on existing developments, the Forest will coordinate with project proponents and CDFG to insure associated fish and wildlife habitats and sensitive plant resources are maintained near current levels on new proposals and improved where needed on relicense proposals.

#### 4.3.9

##### Riparian Areas

Riparian zones will extend 100 feet on both sides of rivers and perennial streams and from shorelines of lakes and ponds. Of an estimated 155,000 acres of riparian land, about 33,000 will be managed for multiple use. Harvesting timber in riparian areas will be limited to road rights-of-way, skyline corridors, public safety and fish and wildlife enhancement projects. Most of the Forest's riparian land is located in Wilderness, thereby giving a high level of protection, preservation, and enhancement of fish and wildlife, soil and water, and riparian plant communities now and in the future.

Since riparian zones receive proportionately more use from wildlife, road and foot traffic, and grazing cattle, various projects to protect and enhance affected riparian areas are part of this Plan. Travelways are not considered riparian dependent, though they will be permitted to occur when compatible with riparian dependent resources. Potential impacts will be moderate to low and future overall conditions expected to be very similar to present conditions because of protective measures proposed for various management activities. Protection under Federal laws will be accomplished through Best Management Practices (BMP) (including SMZs that control commodity production and associated constructed facilities, such as roads) and Standard and Guidelines.

#### 4.3.10

##### Range

Permitted livestock use will increase to about 40,600 AUMs annually. Most of the increase will be accomplished by taking advantage of intensified grazing on annual grassland, treatment of chaparral, transitory range, construction of water developments and additional drift fences. Limited areas of primary range, presently in poor condition, will be managed to improve range.

condition. Increased production will be partially offset by reducing or discontinuing use of poor condition range at higher elevations and by grazing adjustments on some ranges to maintain amenity values, such as dispersed recreation and wildlife resources.

Site specific management decisions will be made in individual Allotment Management Plans (AMPs) through an interdisciplinary planning process. Continued utilization of positive measures, such as salting, herding, water developments, fencing and riding will be used whenever the opportunities exist, to improve livestock distribution and minimize impacts to riparian areas. If mitigation is unsuccessful in preventing unacceptable resource damage to riparian habitat, measures will be taken to reduce or eliminate livestock use in affected areas.

#### 4.3.11 Timber

Timber production targets are less under this Plan than in the preceding timber management plan. This reduction reflects changes in management direction that provide greater emphasis on other resources and a shift of productive timberland into Wilderness designation. Uneven-aged management (Group Selection harvest) will be tested on some high volume per acre tractor loggable Regulation Class I land. Additional uneven-aged management (Group Selection harvest) will occur on tractor loggable Regulation Class II land. Uneven-aged management (Individual Tree Selection) will be used on all Regulation Class III land. In addition, harvest on low site land will only be conducted to maintain health and vigor of existing stands. Timber management will be conducted on 328,900 acres of the Forest's 393,700 acres identified as the tentative CAS land base.

Silvicultural treatments will be selected to meet site-specific objectives of a particular, emphasized resource. Management options will include prescribed burning for wildlife, replanting to replace fallen trees on recreational sites, and selective harvesting in SMZs and visual retention areas. Although these activities will not result in appreciable change to the existing Forest condition in the first decade, the amount of late seral stage vegetation will decline over the planning horizon.

The goal on the full- and modified-yield CAS land will be timber production. Forest stands will be managed to fully utilize site productivity. New timber stands in areas of sufficient size and location to facilitate stand tending, protection, and future harvest will be created. Treatments to concentrate growth on the most vigorous and healthy trees will be made during the first 30-40 years of stand life. Final harvest of regenerated even-aged stands is scheduled to begin as stands reach culmination of mean annual increment (CMAI) measured in cubic feet. Intermediate harvest in these stands may extend culmination period. Assumptions used for rotation age

are given in Region 5 Land Management Planning Direction.

Given the projected harvest schedule of the Plan, saplings, poles, and small sawtimber will replace existing late seral stage tree stands. The majority of these stands will be even-aged of relative uniform density. Increased tree growth and site adaptability is expected from continuation of the Regional Genetic Improvement Program.

Size, spacing and sequence of regeneration harvest will be designed to provide diversity of age classes between timber stands, maintain or improve wildlife habitat, and provide an acceptable level of visual quality.

Measures to protect soil, water and cultural resources will be an integral part of all harvest activities. In stands where hardwoods occur naturally, they will be managed to maintain and enhance biological, wildlife, cultural and commodity values.

Cull logs and slash will be available to the public for firewood and, after providing for wildlife habitat needs, use of large amounts of woody biomass materials for energy production will be encouraged.

The overall effect of management activity on full-, modified- and limited-timber yield CAS land is to increase age class diversity in these areas. These stands, of varying ages and sizes, intermingled with upwards of 250,000 acres of noncommercial land, are part of timber emphasis areas.

#### 4.3.12 Integrated Pest Management

Pest management activities will be moderate to high, particularly in developed recreational areas and on land managed for timber production.

#### 4.3.13 Diversity

This Plan will provide for a wide variety of plants and animals by retaining at least five percent of each seral stage in each major vegetation type by the end of the fifth decade. This Plan also will provide for a pattern of early and late seral stage habitats produced by the interspersions of less intensively managed timber stands with more intensively managed stands. This mosaic will reduce the possibility of intensive timber management in large contiguous homogenous timber stands and will help provide wildlife travel corridors and islands of habitat within and between larger stands of vegetation. Riparian areas and sensitive furbearer corridors will also create mosaic patterns and provide movement corridors.

Timber management intensity will have a major effect on diversity. This Plan will include a distribution of management intensity prescriptions that slightly favors

late successional stage habitat on capable and suitable (CAS) timber land (56 percent extensive management and 44 percent intensive management). If intensively managed areas are compared to total forested land base instead of CAS, 69 percent will be extensively managed and 31 percent intensively managed. By the end of the fifth decade, this distribution of timber management intensities will result in 10 percent of the forested areas being in early successional stage, 14 percent mid-successional stage and 76 percent late successional stage. Typical late seral stage stands with multi-layered large trees, with obvious signs of decadence and a tree canopy cover of over 70 percent, will total about 119,000 acres (21 percent of the forested land base) by the end of the fifth decade.

This Plan will include treatment of 2,000 acres of chaparral habitat per year by crushing and prescribed burning. This treatment, in conjunction with wildfires will produce a mosaic of brush including 30,000 acres of early successional stage, and 50,000 acres of late successional stage

None of the 5,000 acres of black oak stands on CAS land will be harvested for conversion to conifers. However, mature hardwood trees within conifer stands, above the required crown closure standard, will be removed reducing hardwoods in some harvested stands.

Snags and down logs will be managed at densities intended to preserve primary cavity nesting birds near current densities. In areas where Full-Timber Yield prescription is to be used, snags will be created by the second decade because snags left in regeneration cuts in the first decade are only expected to last for ten years. Down logs will be managed at levels that are believed to be between the existing and naturally occurring condition. Other special habitat elements such as cliffs, talus, rock outcrops, caves, ponds, marshes, etc will remain unchanged within the Forest.

#### 4.3 14 Soil and Water

There will be a moderate potential of reducing water quality and soil productivity. However, mitigation measures described in BMP and coordinated specialist input will be used in project planning to maintain present levels of water quality and soil productivity. Water quality will remain at its existing high level and meet or exceed State and Federal objectives

Water yield increases will result from timber harvesting activities, but especially from clearcut and shelterwood techniques. Other resource projects, such as fuelbreaks and 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. Based on historical averages, annual water yield at end of first decade will be increased by 60,000 acre/feet.

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 452 acres. Approximately 226 acres will be treated in the first decade. Soil productivity will be improved on sites that have been degraded by past management practices.

#### 4.3.15 Minerals

Opportunities for mineral exploration and development will improve as some nonroaded land is entered for resource management purposes. With emphasis being placed by the current administration on decreasing U.S. dependence upon foreign sources for strategic and critical minerals, it is likely that exploration, development and extraction of minerals will increase. As a result of this increased minerals activity, cost of administering the minerals management program is expected to increase.

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

Rejustification, by 1991, of mineral withdrawals will result in some withdrawals being retained to protect key resource areas, such as administrative sites and recreational developments.

#### 4.3 16 Lands

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

##### Priority 1.

- (a) Acquire, through land adjustment, key tracts of non-Federal land (1,000 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 extent necessary to protect public health and safety;
- (d) Property lines will be surveyed, marked and posted to standard with emphasis on those areas of potential occupying trespass and production of resource commodities; and
- (e) Resolve unauthorized occupancies through sale or interchange of Federal land in conformance with Small Tracts Act, when appropriate.

## Priority 2.

Acquire remaining land classified as desirable for National Forest status

## Priority 3.

- (a) Acquire tracts, which 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 primarily valuable for watershed purposes, timber production, or public recreation and needed to adequately block in or consolidate National Forest land.

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 generation 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 trend. Permits related to urban uses will not normally be provided in areas where county zoning calls for limited urban development.

### 4.3.17

#### Hydroelectric Development

There will be continued high interest in maintaining or improving existing projects that store water from spring runoff and free flowing streams behind dams to create hydroelectric power and/or to make water available for delayed release to downstream users. Other projects will be proposed that divert water from streams into penstock, then return to streams.

Major potential hydroelectric projects which are located all or in part in the Forest are shown in Figure 3.06 of FEIS. Additionally, numerous minor projects will continue to be proposed. Some of these projects will prove economically feasible and environmentally sound, resulting in eventual development. Others, due to high costs, low outputs or adverse environmental impacts, will be dropped from further consideration.

Conflicts between a proposed hydroelectric development and the need for free-flowing streams will continue to occur. Increasing number of streams being proposed for hydroelectric development will result in need for cumulative impact studies that address combined effects of several projects on entire watersheds. Also, wild and scenic river studies have been made to determine if certain streams should be recommended for designation within the National Wild and Scenic River System. If designation by Congress occurs, hydroelectric

development will be foreclosed or curtailed on some river segments. As water developments increase up and down the State, some white water rafting areas will be eliminated. This will result in increased pressure on remaining white water rafting areas, such as Merced River and Kings River. Continued efforts will take place to reduce acreage withdrawn for power purposes that appear to be in excess of power needs.

### 4.3.18

#### 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 local 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.

### 4.3.19

#### Special Areas

Existing and potential special areas in the Forest are described in this section. In most cases special areas are administratively designated (in contrast to legislative designations such as Wilderness or Wild and Scenic Rivers) to be set aside or protected for a specific reason.

**Special Interest Areas** - A SIA is designated because of unusual or outstanding scenic, cultural, scientific, natural, or other unique characteristics, which merit special attention and management. They are managed to protect the resources and, where appropriate, foster public use and enjoyment of their significant values.

**Research Natural Areas** - The establishment of RNA recognizes need to promote and protect natural diversity. They typify important forest, shrubland, grassland, alpine, aquatic, and geologic types and other natural conditions that have special or unique characteristics of scientific interest and importance. These areas are for non-manipulative research and education.

**Experimental Forests** - Experimental forests exist throughout the NFS for field studies and to demonstrate forest management practices.

**Experimental Ranges** - Experimental ranges exist throughout the NFS for field studies and demonstrating range management practices.

**Special Management Areas** - This program provides protection for areas containing outstanding examples of plant and animal communities, geological features, scenic grandeur, or other special attributes that merit special management. Areas so designated are managed to emphasize recreational and other specified related values. The law or order designating each area provides

specific objectives and guidelines for management of the area.

**National Natural Landmarks** - This program provides a mechanism for identifying, protecting, and maintaining sites which have unique scenic, geological or botanical features.

The following are established or recommended special areas:

	Established Acres	Recommended Acres
<b>Special Interest Areas</b>		
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		1,600
McKinley Grove Botanical Area		520
Nelder Grove Historical Area		1,434
<b>Research Natural Areas</b>		
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
<b>Experimental Forest</b>		
Teakettle	3,200	

### Experimental Range

San Joaquin	4,580
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### Special Management Areas

Kings River	48,668
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#### 4.3 20

#### Transportation and Facilities

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

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

Total miles of roads maintained annually will vary according to assigned maintenance levels and frequency of activities scheduled in various areas. Maintenance activities result from volume of timber harvest, recreation traffic, fire management, administrative traffic, protection of adjacent resources and capitol investment.

Because 75% of existing buildings are presently over 36 years old, many will be eliminated or replaced by 2020.

Construction of three major work centers/fire stations will be needed. This includes two new work centers, Kokanee at Huntington Lake and Batterson near Bass Lake, as well as a combined Ranger Station serving Kings River and Pineridge Ranger Districts. In addition to these facilities, the Forest Service may choose to accept facilities that will be constructed at hydroelectric projects. Acquisition of the Tule Meadow facilities and consolidation of the other existing facilities may be essential.

#### 4.3.21

#### Protection

Protection priority will increase moderately, with emphasis on areas of high value urban interface, critical watersheds and commercial forest land. The major functional activities for the Fire Management Program is 68% for initial attack, 20% for prevention, 1% for detection, and 11% for fuel management. The accelerated fuel reduction program, which includes fuelbreak construction and maintenance and periodic burning of natural fuel, will substantially increase costs before 2015, until backlog fuel treatment is completed.

Before 2015, potential for losses from wildfire on commercial forest land will have increased as total plantation area under 40 years old reaches approximately

129,000 acres. There will be a gradual budgeting shift from fuel reduction programs to increased protection on commercial forest land. Where 50% of the budget increase is initially targeted for fuel reduction programs, before 2015 this activity will account for less than 20%. After 2015, suppression costs in front country will decline below 1982 levels. Prescribed burning will continue to be used to maintain reduced fuel levels.

Upon approval of this Plan, a fire management action plan will be prepared. This Plan will describe the appropriate wildfire suppression responses.

#### 4.4 MANAGEMENT PRESCRIPTIONS

Management prescriptions are sets of overall direction for managing individual land units. Collectively, they represent the range of management options available to the Forest. Each prescription describes a management theme, including emphasized resources and general direction for its management.

For planning purposes, the Forest was divided into geographical subdivisions called management areas. To develop planning alternatives, the interdisciplinary team assigned management prescriptions to individual management areas in a manner that best met the theme of each alternative. The range of alternatives was set to display a broad spectrum of management intensities and resource emphasis.

All management prescriptions are subject to additional more site-specific direction and/or constraints shown on Resource Element Maps. These element maps and applicable direction are considered part of the prescription for each management area. The management prescriptions for Sierra National Forest are summarized below. Additional information regarding these prescriptions can be found in the accompanying EIS and the planning files.

##### 4.4.1 Wilderness

This prescription maintains and protects wilderness values. All National Forest land within designated wilderness is managed in accordance with the Wilderness Act of 1964 (16 USC 1131-1136) and/or terms established in the legislative act. The areas are free of roads. Motorized trail use is prohibited. Pest management activities are used to protect adjacent land from unacceptable pest-caused damages and prevent unnatural loss of the wilderness resource from exotic pests. Opportunities are abundant for primitive and semiprimitive dispersed recreation, such as hiking, horseback riding, camping, fishing, hunting, sightseeing and photography. No regulated or unregulated timber yields are planned. Fire protection activities are conducted to minimize suppression impacts and permit reintroduction of prescribed and natural occurring fire

Livestock grazing continues with approved Allotment Management Plans. In most wildlife populations, species composition and habitat are allowed to change as part of natural processes. Wildlife objectives focus on stands favoring late successional stage vegetation and species that prefer these habitats.

##### 4.4.2 Wild, Scenic, and Recreational Rivers

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

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

Scenic segments 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 are allowed, as well as recreational pursuits along the river.

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

##### 4.4.3 Minimum-Level Management (Class IV)

This prescription provides custodial protection to existing Forest resources. Management activities are limited to monitoring for conditions that might adversely affect resources on such sites. Appropriate actions are initiated when and where necessary to reduce threat to adjacent resources. Wildlife objectives focus on stands favoring late successional stage vegetation and species that prefer these habitats. Timber harvest can occur incidental to other permitted activities. Dead and dying timber may also be harvested after analyzing and providing for other wildlife habitat needs. All timber harvest is unregulated. This prescription applies to Mt. Raymond, Ferguson Ridge, Devils Gulch, Dinkey Lakes, Kings River Special Management Area, SOHAs, (unless another prescription

is authorized in the SOHA management plan), portions of the Developed Recreation Area visible from Courtright and Wishon Reservoirs, the area between the Ansel Adams and Dinkey Lakes Wilderness leading to Edison and Florence Lakes, and riparian areas

4 4 4

#### Limited-Timber Yield (Class III)

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

4.4.5

#### Modified-Timber Yield (Class II)

This prescription provides moderate levels of timber outputs, while allowing significant considerations for wildlife habitat and visual quality. Where viewshed protection is planned, vegetation management can be evident, but is subordinate. Wildlife objectives focus on balanced stands favoring early and mature successional stage vegetation and species that prefer these habitats.

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

4 4 6

#### Full-Timber Yield (Class I)

This prescription provides intensive management of selected forest resources, including timber, range, water and wildlife habitat. The greatest production of goods comes from these areas. A full range of intensive pest management practices is available to minimize pest damages. An efficient and economical transportation system is developed for resource management. Dispersed recreational opportunities exist in a roaded

natural setting. OHV use is permitted on designated routes or areas.

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

4 4 7

#### Developed Recreation

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

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

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

4.4 8

#### Administrative Sites

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

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

#### 4.4.9

##### Special Interest Areas

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

#### 4.4.10

##### Special Management Area (Kings River)

This prescription emphasizes 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 are permitted to the same extent as was before the enactment. OHV use is restricted to designated roads and trails.

Timber harvesting is permitted only as required to control insect and disease attacks, salvage fire damaged timber, and conserve scenery or historical values. Hunting and fishing is permitted where applicable State and Federal laws, fish and wildlife values, and public safety are not jeopardized. Land within the area continues to be withdrawn from mineral entry. Outdoor recreation use and hiking trails are permitted.

#### 4.4.11

##### Experimental Forest

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

#### 4.4.12

##### Experimental Range

This prescription provides for range and wildlife research in nonforested areas. Management activities on experimental ranges do not conflict with research objectives. The range of permitted management activities are the same as those described for experimental forests. Recreational opportunities are limited.

#### 4.4.13

##### Research Natural Areas

This prescription protects and manages natural areas as potential components of the Forest Service RNA System. Dispersed nonmotorized recreation is limited. Livestock grazing is restricted or prohibited. Mineral exploration and/or development is prohibited. No timber yields are planned. Specific fire protection objectives are set for each area to protect natural values. Pest management activities are directed toward non-native pests. Most wildlife objectives for species favoring late successional stage vegetation are met.

#### 4.4.14

##### Land Exchange

This prescription improves National Forest land ownership patterns through land exchange. Emphasis is 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 are managed for a range of multiple use objectives and outputs, but investments are limited. The objective is to exchange these parcels for non-Federal land within National Forest boundaries, which 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 is not identified for disposal.

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

#### 4.4.15

##### Dispersed Recreation

This prescription emphasizes dispersed recreational opportunities, primarily in semiprimitive, roaded natural and rural recreational opportunity-class settings. Emphasis is also placed on wildlife management. Visual condition is normally Type III or better. Levels of

development and management are expressed by management direction and standards and guidelines.

Although most 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 are allowed on suitable land. Road construction is 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 is generally allowed to continue. Semiprimitive non-motorized areas are closed to OHV use.

#### 4 4.16

##### Front Country

This prescription emphasizes wildlife and range management activities, with adequate protection of watershed values. Forage and range improvements are provided as needed. Vegetative manipulation, such as prescribed burns and fuelbreaks, are 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 are very important. Multi-resource benefitting projects (wildlife, range, fuel management) are the management objective.

#### 4.5

##### MANAGEMENT STANDARDS AND GUIDELINES

#### 4 5.1

##### Orientation

These management standards and guidelines supplement National and Regional standards, guidelines, and direction and also complete the management prescriptions for the management areas. Standards and guidelines apply to all management areas and analysis areas or aggregates of analysis areas. The numbered areas are shown on the Forest Plan Map. Their use depends on the prescribed prescription. They start with large groupings of analysis areas and progress downward through subgroups to individual analysis areas. Thus, to ascertain the sum total of standards and guidelines applicable to a specific area, the reader must work progressively through them

For example, the first grouping of standards and guidelines is forestwide, affecting all applicable management areas. The second grouping is based on individual management areas with standards and guidelines applicable to all analysis areas within the management area. The third group has standards and guidelines that apply within a single analysis area or grouping of analysis areas within the management area. The concept is initially of a very broad focus, progressively narrowing through subgroupings to specific locations as necessary to deal with issues and concerns,

opportunities, and needs identified in the planning process. Site specific areas are also located through use of the Element Maps accompanying this document.

#### 4.5.2

##### Forestwide Standard and Guidelines

#### 4 5.2.1

##### Recreation

1. Provide moderate increases in intensively used recreational developments.
2. Rehabilitate trails for user convenience and resource protection by 2010.
3. Encourage use of Forest by disadvantaged, disabled, and minority persons. Provide for their needs when designing facilities.
4. Continue emphasizing opportunities for equestrian uses.
5. Provide substantial increases in interpretive services about Forest environments and Forest management programs
6. Increase capacity of developed sites about 7% by 2000. Use the FERC hydroelectric licensing/relicensing process to develop recreational facilities necessary to accommodate project-induced recreational needs.
7. Provide for upgrading commercial recreational services and facilities such as stores, outfitters guide services, resorts, etc. Existing permittees will be allowed to expand in response to public demands within existing recreation development and experience level. The following are examples of recreation development level:  
  - Level 1 Ansel Adams - Primitive
  - Level 2 Florence/Edison - Semiprimitive motorized
  - Level 3 Redinger - Motorized
  - Level 4 Huntington/Dinkey - Rural
  - Level 5 Bass Lake - Urban
8. Provide for expansion of Sierra Summit ski area to capacity before authorizing additional ski area development.
9. Develop a group day use and trailhead facility on Trails End site.
10. Prohibit expansion of Camp Fresno and regain portions of the camp's facilities which conflict with unrestricted public access and use of Dinkey Creek.
11. Prohibit expansion of Camp El-O-Win onto the Forest's land.

12. Allow no new recreation lots or tracts to be established.
13. Establish visitor information stations at locations accessible to and frequented by large numbers of people. Encourage joint agency information centers.
14. Provide increases in road and trail construction to facilitate opportunities for dispersed use.
15. Provide opportunities for increasing dispersed recreation about 15% by 2000
16. Rehabilitate facilities in dispersed recreational areas to provide for visitor comfort and site protection by 2005
17. Except for over-snow vehicles, allow no cross-country OHV travel. Designate additional OHV routes in areas where cross-country travel was previously allowed. Open all Maintenance Level 1 and 2 roads for OHV use unless designated closed Maintenance Level 3, 4 and 5 roads are closed to unlicensed OHV use unless designated as a confirmed use road. Designate those trails where motor bike use will be allowed. Restrict snowmobile use to designated routes in snowplay areas, along major highways, within major developed recreation areas, and in popular cross-country ski areas.
18. Provide protection and retainment of trails and OHV routes when land-disturbing activities are planned
19. Provide parking and sanitation facilities for snowplay, snowmobiling and cross-country ski areas.
20. 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
21. Follow Sierra National Forest Manual direction, providing Forest policy on recreational residence tract administration
22. Maintain acreages in each ROS class to meet objectives shown on ROS Element map.
23. A plan will be developed, as needed, to manage bicycle use in mountainous areas outside of wilderness.
24. Cooperate with State, other agencies, and user groups to identify and, where compatible with Forest plan management objectives, develop segments of trail that support the concept of a statewide trail system connecting use areas and providing opportunity for long distance trail touring.

#### 4.5.2.2

#### Visual Resources

25. Meet visual quality objectives for all Forest land, managing for Visual Condition Types II and III along designated recreational travel routes and around destination recreational areas. (See Visual Quality Element Map.)

26. Where visual quality objectives are Type II Visual Conditions:

- a. Manage activities affecting vegetative cover type or structure to be visually buffered after completion.

- b. Manage CAS timber stands for diverse size classes and distribute according to the following guide:

Size Class	% crown closure
30 + inches	28-38
21 - 30	23-31
11 - 21	14-18
5 - 11	12-16
< 5	8-12

- c. Timber removals will generally be limited to sanitation and salvage, with complete slash treatment

- d. Design and install structures to be compatible with and subordinate to the landscape's natural characteristics.

- e. Roads are to be designed and constructed to be subordinate to the landscape's natural characteristics, after completion, as viewed from off-site.

27. Where visual quality objectives are Type III Visual Conditions:

- a. Activities affecting vegetative cover type or structure may be visually evident, but will appear subordinate to the landscape's natural characteristics after completion.

- b. Manage CAS timber stands to maintain size class distribution as follows:

Size Class	% crown closure
30 + inches	0
21 - 30	25-32
11 - 21	25-32
5 - 11	22-28
< 5	15-21

- c. Timber removals in the foreground will be limited to group selection and shelterwood, with total slash treatment. Clearcutting may be used if site condition precludes assurance of a healthy stand using shelterwood.
- d. Emphasize shelterwood over clearcutting in the middleground, limiting harvest units generally to 20 acres or less.
- e. Design and install structures to be compatible with and subordinate to the landscape's natural characteristics.
- f. Roads are to be designed and constructed to be subordinate, after completion, to the landscape's natural characteristics, as viewed from off-site.
- g. The visual quality objective is Type III Visual Conditions in the immediate foreground at all developed recreational sites of 25 PAOT capacity, or greater, unless another objective is specified on Visual Quality Element Map. Similar consideration will be given to smaller sites, based on their significance in project planning
- h. Seldomly-seen areas within Type III Visual Condition zones, where regulated timber harvest is practiced, may be managed for Type IV Visual Conditions.

28. Where visual quality objectives are Type IV Visual Conditions:

- a. Plan management activities in the foreground that may appear dominant, suggesting the features of the natural landscape
- b. Plan activities in the middleground that may appear dominant, but have features similar to those occurring naturally.
- c. Plan activities in the background that may be evident, but subordinate to the natural landscape

29 Where visual quality objectives are Type V Visual Conditions

- a. Plan management activities in the foreground or middleground that may be dominant and unnatural, only suggesting features natural to the landscape.
- b. Plan activities in the background that may appear dominant, with features similar to those occurring naturally.

4.5.2.3

Wilderness

- 30. Provide opportunities for public use, enjoyment and understanding of wilderness.

4.5.2.4

Wild and Scenic Rivers

- 31. Manage designated river corridors according to classification and direction established in the Wild and Scenic River management plans.
- 32. Study and inventory rivers for possible inclusion into the Wild and Scenic River System and protect until future status is determined.

4.5.2.5

Fish, Wildlife, and Sensitive Plants

- 33. Generally, riparian management areas will 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 will be 150 feet.
- 34. Maintain or increase current forestwide program of direct habitat improvement.
- 35. 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.
- 36. Annually update 3-year habitat improvement plans for each Ranger District in cooperation with California Department of Fish and Game.
- 37. For fish and wildlife habitat projects funded through timber sales, give highest priority to meadows and riparian areas in sales areas.
- 38. For habitat improvement projects funded from sources other than timber sales, focus on habitats outside the timber planning compartment.
- 39. 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 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 will be 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 #6 that could jeopardize the current status of pure Lahontan cutthroat trout populations.
- 40 For each Class 1 watershed, timber sale 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.
41. Seek flows and habitat conditions below new hydroelectric projects that maintain fishery and wildlife resources near naturally occurring (pre-project) conditions.
- 42 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).
- 43 When watering roads for dust abatement, protect fishery streams by:
- a. Allowing no drafting unless immediate downstream discharge from drafting site is maintained at 1.5 cfs or greater
  - b. Permitting water drafting to remove no more than 50% of any stream's ambient discharge that is over 1.5 cfs.
  - c. Allowing no drafting in or above stream reaches supporting pure populations of Lahontan cutthroat trout (See Section 4.5.16 and EIS Section 3.5.5.3).
44. Minimize, during July, management activity, such as logging and vehicular traffic, in deer population centers 2, 3, 4, 5, 7, 10, 12, 14, 15, 16, 22, 24 and 29. (See Wildlife Element Map)
- 45 Minimize management activity in deer holding areas 2, 3, 4, 6 and 10-18 during the following periods (See Wildlife Element Map):
- a. Holding areas above 5,000 feet elevation - May 15 to June 15 and October 1 to November 30.
  - b. Holding areas below 5,000 feet elevation - May 1 to June 1 and October 15 to November 30.
46. Keep vehicle travel at low levels in deer winter ranges 2, 5, 6 and 7 from December 1 through April (See Wildlife Element Map)
47. In key wildlife areas, regulate road use through seasonal or permanent closures. Do not close roads needed for permanent public use. (See Wildlife Element Map)
48. In key deer areas, reduce disturbance from normal traffic by leaving a screen of vegetation immediately adjacent to maintenance Level III, IV and V roads, where feasible and practical. Where screening does not exist or when existing screening cannot be protected during routine management activities, carryout subsequent management in a manner that will not impede the development of adequate screening
49. Within deer holding areas 2, 3, 4, 6, 10-18 and deer population centers 2, 3, 4, 5, 7, 10, 12, 14, 15, 16, 22, 24 and 29. (See Wildlife Element Map):
- a. The average regeneration unit will be no greater than 10 acres, unless sizes and shapes are organized to optimize the usable area for deer.
  - b. Plant conifers on a 6' x 12' spacing, with widest distance along contour.
  - c. Release from grass, forb and shrub competition will be allowed until plantations are certified as acceptably stocked (typically 3 years).
  - d. Grasses, forbs and shrubs may be planted after plantations are certified as acceptably stocked.
- 50 Seed skid trails, landings and temporary roads, where desirable and feasible, with species favored by wildlife.
51. Use the management plans for the North Kings, San Joaquin, Huntington, Oakhurst and Yosemite deer herds as deer habitat management guides.

52. Cooperate with private landowners to encourage resource protection on private lands.
53. Protect nests and dens of all sensitive wildlife species until young are gone. Arrange harvest units and other management activities to preserve nests and dens
54. Protect Forest's 6 identified superior nest sites for peregrine falcons.
55. Protect important roost trees and feeding areas for wintering bald eagles at Shaver, Redinger, and Bass Lakes, and Pine Flat Reservoir.
56. 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
57. Provide 24 California spotted owl habitat areas (SOHAs) outside wilderness areas, each with at least 1,000 acres of suitable core habitat and 650 acres of replacement. Prior to approving new management activities within the 4,500 acre circle, as depicted on the spotted owl/sensitive furbearer element map, an analysis will be prepared and a SOHA plan written to identify the 1,000 acres of base habitat and 650 acres of replacement habitat.
58. Manage marten and fisher habitat management areas with the goal of maintaining sufficient amounts of habitat and habitat characteristics that contribute to the viability of these species. Validate assumptions of the Regional literature review as modified to meet Sierra National Forest conditions. Use information from research, administrative studies and monitoring to improve management for the maintenance of marten and fisher in coordination with California Department of Fish and Game.
59. Continue existing Forest uses in marten and fisher management areas when such activity will not directly or indirectly preclude use of the areas by marten and fisher.
60. Permit limited-timber yield harvests and other new activities in marten and fisher habitat management areas when supported by a biological evaluation and habitat management plan.
61. Prepare biological evaluations for proposed new activities in management areas with the objectives of maintaining sufficient amounts and distribution of marten and fisher habitat and habitat characteristics to contribute to a viable population and sustain the health and vigor of timber stands. Based on the biological evaluation and environmental analysis, utilize timber harvest practices such as salvage, sanitation, individual tree and group selection harvests that meet these stated objectives.
62. For connectivity, manage a minimum of 600 foot wide travelways, identified and mapped as part of the planning record, to provide linkage between marten and fisher habitat management areas. Continue existing Forest uses in and adjacent to travelways. Allow new management activities in travelways when they will not directly or indirectly preclude use by marten and fisher as determined by a biological evaluation.
63. Manage all marten and fisher reproductive sites, located outside designated habitat management areas, to retain suitable habitat attributes. Include 120 acres of suitable habitat if adjacent to mature timber stands or 500 acres if adjacent to open canopy areas. Identify recommended acreage and habitat conditions utilizing the biological evaluation process. The biological evaluation should analyze:
  - a) whether to move habitat management area boundaries to incorporate known marten and fisher reproduction sites, or
  - b) modify the boundaries of the seven identified habitat management areas to accommodate the use of suitable habitat, keeping acres managed for furbearers constant. Permit no new management activities in any reproductive site that will preclude use of the area by marten and fisher for reproduction, as evaluated in a biological evaluation.
64. Manage snag and down logs within each timber planning compartment as follows:
  - a. Maintain an average of 1.5 hard snags/acre in sizes 15-24" DBH x 20' or larger in height in all time periods
  - b. Maintain an average of 0.5 hard snags/acre in sizes 25" or greater DBH x 20' or larger in height in all time periods
  - c. Maintain a sufficient number of live trees (replacement snags) in the compartment to sustain average densities in a and b.
  - d. Retain approximately 3 down logs/acre measuring at least 20" diameter x 20' in various stages of decomposition
  - e. Snags used to meet the average should be comprised of hardwood and softwood trees.
  - f. Snags should be managed in small clumps of 5 or 6 that are well distributed through the compartment, and down logs should be uniformly distributed, where feasible.

- g. Cedar snags should not be used to meet prescribed snag densities. improvement measures to increase the number of oaks
  - h. Snags used to meet the average should be concentrated more in the vicinity of streams, meadows, and the edges of openings
  - i. Leave all snags and downed logs in riparian areas, where consistent with public safety and fisheries habitat objectives.
  - j. If the conditions in items a., b. and c. are not met in a compartment, the compartment should meet these conditions when project activity is completed
65. On CAS timber land, forestwide, maintain and grow mast-producing oaks in numbers proportional to current inventory. However, where hardwoods and conifers coexist, the goal is to increase conifers, subject to limits imposed to protect oaks. Opportunity to increase conifers in regeneration units will be evaluated on a stand-by-stand basis, while targets for oak management will be evaluated by timber compartment or planning area
66. Manage oaks where they occur naturally as follows:
- a. In harvest units and other treatment areas within key deer winter ranges, migration corridors, holding areas, and population centers, the abundance of oaks on CAS land (as measured by their contribution to regulated stand crown closure) should not be less than half the existing average oak crown closure of mast producing oaks on all CAS land within the deer areas, or 20% crown closure, whichever is greater. The existing, average oak crown closure in timber compartment deer areas and other planning areas should be determined from the best available data for 1985. Where regenerated stands average less than 20% crown closure of mast producing oaks prior to regeneration, retain all oaks to the extent practical.
  - b. For other harvest units and treatment areas, the abundance of oaks (as measured by their contribution to crown closure) should not be less than one-quarter of existing average crown closure of mast producing oaks for all CAS land within the compartment or 10% crown closure, whichever is greater. Where regenerated stands average less than 10% before regeneration, retain all oaks to the extent practical.
  - c. In noncommercial areas, retain all oaks for wildlife needs, except in existing and proposed shaded fuelbreak areas. Where desirable and feasible, undertake direct habitat
67. Develop sensitive plant species management guides to identify population goals and compatible management activities that will maintain viability.
68. Manage sensitive plant species to avoid future listing as threatened and endangered. Ensure maintenance of genetic and geographic diversity and viable populations.
- 4.5.2.6  
**Riparian**
69. Give primary management emphasis in riparian areas to protect and enhance the riparian ecosystem, riparian vegetation, water quality, soils, fish and wildlife resources.
70. Riparian area protection and Streamside Management Zone determination will be based on methods described in FSH 2509.22, Sierra Supplement 1 which gives specific direction for width determinations.
71. In the absence of on-site riparian area protective width determinations, riparian areas will 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.
72. 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, Sierra Supplement 1.
73. Riparian areas in the Forest will be mapped, inventoried, and monitored during the current planning cycle.
74. Manage vegetation in designated riparian areas so existing forestwide diversity is maintained in all periods.
75. Maintain or enhance productivity of Forest meadows to accommodate wildlife and range resources.
76. In stream reaches occupied by fish, any activity that results in trampling and chiseling of stream banks should not exceed 20% of any given stream reach. Controls such as re-routing trails, relocating dispersed campsites, and/or fencing of areas will be used to manage activities and improve riparian conditions in identified areas not meeting this standard

77. Protect streamside zones by locating new roads outside of riparian areas, except at stream crossings.
78. Avoid constructing new roads within the perimeter of meadows and other riparian areas where opportunities exist to relocate or obliterate existing roads
79. When existing routes through riparian areas and meadows are not compatible with riparian dependent resources, consider re-routing.
80. Allow picketing or tethering of stock in meadows and overnight tie-ups no closer than 100 feet of lakes and streams.
81. Seek flows below new hydroelectric projects that maintain riparian resources at adequate levels (near current, pre-project conditions) so as to protect water quality
82. During relicensing of hydroelectric projects, seek flows favorable to riparian resources on projects obviously degraded by the project; when it doesn't conflict with instream flows recommended for the fishery resource.

#### 4.5.2.7

##### Range

83. Provide structural and nonstructural range improvements to increase forage production and utilization to 40,600 AUMs/year by decade 5. Follow the direction in FSM 2211, during Forest Plan implementation, when updating and developing allotment management plans.
84. Emphasize multi-purpose brush manipulation treatments such as fuel reduction and/or prescribed burn projects, which will benefit wildlife, watershed, range, recreation and fire management.
85. Maintain current level of permit administration.
86. Use transitory forage produced by wildfire and other resource activities.
87. Extend grazing seasons into winter and early spring on low elevation annual grass ranges and utilize treated brushfields and transitory range.
88. Salt grounds will be located more than 1/4 mile from streams, meadows and trails.
89. Manage domestic livestock to meet wildlife needs in identified important wildlife habitat areas.
90. Manage available forage resources in wilderness areas for continued grazing in accord with existing allotment management plans, recreation stock and wildlife needs.

91. Maintain stock driveways and travelways in usable condition.
92. Perennial forage meadows presently in poor ecological condition, but having capability for improvement, will be managed to establish a fair or better ecological condition.

#### 4.5.2.8

##### Timber

93. On lands where resource goals other than timber are emphasized, limited timber yield will be incidental to management of those resources. Silvicultural systems will be selected to meet site specific needs of those resources.
94. On lands where full and modified timber yield is the emphasized or co-emphasized resource, sustained timber production at the highest possible level is the management goal.
95. Establishment and growth of new timber stands is the priority goal for management activities on lands suitable for full and modified timber yield, where timber is the emphasized or co-emphasized resource during this planning period.
96. The silvicultural system best suited to meet the priority goal will be selected by a certified silviculturist, after an on-site analysis of the operational environment
97. When necessary because of catastrophic damage or national emergency, harvest timber by appropriate silvicultural system and reforest all capable lands classed as unsuitable
98. Conduct mortality salvage harvests on all CAS lands, where compatible with other resource values and uses.
99. Cooperate, when commensurate with benefits, with research organizations in trial applications of new practices designed to increase yields.
100. Provide maximum opportunities for firewood gathering by the public prior to closing roads and where compatible with other resources and uses.
101. Consider harvest areas as regenerated when any of the following conditions are met:
  - a. Reproduction, in the minimum amounts specified below, has survived 3 growing seasons and the trees are distributed over 90% of the harvest area.

**Minimum Number Of Trees / Acre**

Forest Type	R-5 Site Class			
	I	II	III	IV
Ponderosa pine	150	125	100	75
Mixed conifer	150	150	150	150
Red fir	200	200	200	200
Subalpine	125	100	75	75

- b. Following removal of all merchantable overstory trees and completion of slash treatment, the basal area weighted mean age of residual growing stock is 50 years or less. The stand is stocked at 70% of desired basal area with growing stock trees more than 5" DBH and with a basal area weighted average height of at least 50% of expected dominant height for the site class concerned.
- c. The stand is stocked with seedlings and trees < 5" DHB and their projected growth would bring them to 70% of desired basal area and 50% of expected dominant height when the basal area weighted mean age reaches 50 years.
- d. The combined stocking of trees > 5" DBH and those < 5" DBH will have the same result as the projected in the preceding definition.
- e. Meets future management objectives.

102. In any year following initial regeneration and prior to a stand meeting a regeneration standard, if the number of surviving trees falls below that needed to meet a regeneration standard, the area will either be planted or receive necessary site preparation maintenance until regeneration standard is met. Such treatments may be discontinued if, through Plan amendment or revision, the land is removed from the "suitable" land classification or minimum stocking standards are reduced

103. Areas being regenerated using an even-aged system shall be dispersed over each management area by employing the following standards, unless more restrictive standards are specified elsewhere in this Plan because of other resource considerations

- a. Maximum size of an individual area to be regenerated by an even-aged system is 40 acres, unless a larger area is approved, as provided for in the regulations.
- b. Distance between regeneration units will average 660 feet or greater. If ground and stand conditions dictate, the Forest Supervisor may approve sales averaging less than 660 feet between regeneration units.

c. Regeneration areas cannot be located adjacent to previous regeneration units until the previous unit meets minimum stocking standards of trees 4.5 feet in height. (See S&G 101)

104. Regeneration of stands made necessary by natural acts need not comply with dispersion standards and guidelines.

105. When natural seed fall is the planned reforestation technique, provide a mineral soil seedbed on at least 70% of the harvest area, assuming BMP are implemented and soil productivity can be protected.

106. Improve genetic selection opportunities during precommercial thinning, and assure plantation stocking is generally at optimum levels, plus provide for planting at least 400 trees per acre, evenly distributed, where artificial regeneration is the reforestation technique.

107. Treat regenerated stands as necessary to assure the average unit has a sufficient number of merchantable trees to reach 90% of normal stocking within 6 decades of stand establishment.

108. Select tree species to plant or seed regeneration areas from those found in natural forests that have occupied the site.

109. Collect all seed from selected, phenotypically superior trees. Plant stock grown from seed collected within appropriate seed zones, except where a certified silviculturist certifies another location is acceptable.

110. The uneven-aged silvicultural system may be applied on suitable timber land in lieu of even-aged management when the following criteria are met:

- a. After treatment, stand will contain at least three distinct and identifiable 20-year age classes. For this purpose planned regeneration following a selection method harvest may be counted as one age class.
- b. Even-aged group generally will not exceed 2 acres in size.
- c. Each age class in stand will occupy approximately equal areas after the second cutting cycle.
- d. The cumulative cubic foot growth, up to the third cutting, will be favorably comparable to the CMAI for that of a new even-aged stand on the site

111. Where timber management practices create residual forest fuels (dead biomass), secondary utilization (personal firewood use, commercial fuelwood and other commercial product utilization) will be preferred to on-site disposal whenever such utilization meets management objectives in a cost effective manner. Public demand for firewood will be given preference over other forms of secondary utilization

112. In areas not meeting standards for wildlife snags, an ID team will determine which merchantable trees must be left to meet wildlife snag standards.

#### 4.5.2.9

##### Diversity

113. Provide vegetation diversity to maintain viable wildlife populations, scenic qualities and to minimize losses from wildfire.

114. Provide and maintain at least five percent of each naturally occurring vegetative seral stage including annual grass, blue oak/savannah, diggers pine/oak, chaparral, black oak woodland, ponderosa pine, mixed conifer, Jeffrey pine, red fir and subalpine forest, where practical or where management direction states differently

115. In the ponderosa pine, mixed conifer, hardwoods and red fir forest vegetation types, maintain at least 5% of the type throughout the Forest (outside wilderness) in each of the following seral stages:

Stage 1	Grass/Forbs
Stage 2	Shrub/Seedling/Sapling
Stage 3B/C	Pole/Medium tree with >40% crown closure
Stage 4B/C	Large trees with >40% crown closure
Stage 4C +	Multi-storied dominated by large trees and canopy closure greater than 70%.

Changes in seral stage distributions will be monitored every 10 years by management area, and compared to the FORPLAN database.

116. Manage chaparral primarily by prescribed burning.

#### 4.5.2.10

##### Integrated Pest Management

117. 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.

118. 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)

119. 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.

#### 4.5.2.11

##### Soil and Water

120. Preclude the impacts of cumulative watershed effects by applying appropriate BMP and mitigation measures during project implementation. Utilize regional CWE methodology when refined for application within the Forest to assess each project for potential to incur cumulative effects

121. Determine recharge/contributing area for groundwater resources serving Forest Service wells used for recreation or administrative sites. Limit any Forest activities from taking place on defined recharge areas that would:

- Introduce contaminants likely to enter groundwater,
- Prevent or significantly reduce infiltration of recharging water, or
- Intercept groundwater from reaching wells

122. Improve water quality and protect soil productivity by restoring deteriorated watersheds on the basis of economic efficiency and severity of problem and its impact on downstream beneficial uses.

123. Avoid development in floodplains, wetlands, and riparian areas, except where alternatives will not meet essential management objectives or purposes. This includes bridges, approaches, water diversion structures and boat ramps.

124. 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 analysis and incorporated into the associated project plan and implementation documents. (See Plan Appendix F)

125. Avoid tractor logging on highly erodible soils, where sustained slopes exceed 35%, except where supported by on-the-ground ID team evaluation.

126. Allow no regeneration harvest on highly erodible soils where sustained slopes exceed 65%.

127. 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.

128. 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. Exceed 150 feet on slopes of 15-35%,
  - 2. Exceed 75 feet on slopes of 35-65%, or,
  - 3. Exceed 25 feet on slopes over 65%,
- b On linear disturbances, such as skid trails and firelines, cross-drain area at the following intervals:

**Interval Between Cross-Drain (feet)**

<b>% Slope</b>	<b>HEHR</b>	<b>VHEHR</b>
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 (VHEHR) and very high (VEHR) erosion hazard ratings, as defined in the Forest Soil Resource Inventory.

129 Road construction on areas with High and Very High Erosion Hazard will 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 of the FEIS)

130. 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 (see FSH 2509.18).

- a. Avoid mixing or removing soils below the A horizon. Roads, skid trails, firelines and log landings are exceptions.
- b. On completion of a ground disturbing project on less than 35% slope, maintain an average accumulation of 50% protective ground cover density in the 1 to 100-hour fuels with some 1,000-hour fuels up to 10" in diameter.

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

131. Secure water rights and obtain water availability assurances for existing and foreseeable future Forest Service nonconsumptive and consumptive uses.

**4.5.2.12  
Minerals**

132. Actively support orderly exploration and development of mineral and energy resources under NEPA, Federal Land Planning Management Act (FLPMA), and mining laws and regulations. Require disturbed area reclamation as soon as planned uses cease. Assist in planning for extraction of minerals to facilitate reclamation. Reclamation will include treatment of any unneeded mine shafts, tunnels, tailing ponds or any other on-site developments.

133. In conformance with P.L. 54-579 (Section 104), review and recommend to the Secretary of Interior by October 1991, whether, and for what duration, the various mineral withdrawals, exclusive of Congressional withdrawals, in the Forest will continue. Other agency withdrawals will be reviewed by the respective agency.

134. Initiate Forest Service withdrawals for new sites only when other available surface use and occupancy controls cannot protect surface resources.

135. Request public and quasi-public agencies, contemplating applications resulting in withdrawals, to review their applications with the Forest Service. Seek to minimize impact of withdrawal on mineral development, while protecting area included in the project proposal.

136. Require compliance with operating plans for surface protection and reclamation.

137. Require operating plans to include measures that control surface runoff and minimize soil erosion.

138. Require operating plans that provide for revegetation of disturbed areas to be in prescription within 2 years of conclusion of operating plan period

139. Within withdrawn areas, all claimed valid existing rights will be verified by a Forest Service mineral examiner prior to authorizing any surface disturbing mineral activities or authorizing surface access development.

140. Access and development in specially designated areas and areas withdrawn from mineral entry, where valid existing rights may be exercised, are

restricted to the extent the integrity for which the area is designated must be maintained.

141 For locatable minerals, act on Notice of Intent and Plans of Operation in a timely manner.

142 Investigate patent applications in a timely manner.

143 As a minimum, determine validity of all claims located in Wilderness areas after Plans of Operation are submitted

144 Require mine operators to furnish a performance bond to cover reclamation in amount equal to an estimate of the cost of reclamation.

145 Require all mining projects (including extraction of road materials) to provide for resource protection and rehabilitation

146 All authorized surface use of a mining claim will be described in the Plan of Operation.

147 Off-claim uses and needs that can be tied to a specific claim will be authorized by special use permit or other conventional document

148 Mineral activities which cannot be tied to a specific claim will be authorized only in the Plan of Operations approved for such activities (such as active exploration or prospecting not within the limits of a claim).

149. Actively pursue and resolve all unauthorized mineral-related land uses.

150. Establish and maintain a listing of all parcels of Forest land that have "acquired land" status.

151 Require lease conditions to be consistent with requirements for mining operations on locatable claims.

152 No leasable minerals in the oil or gas category are known to exist within the Forest. The one geothermal area is economically infeasible at this time. If any oil/gas is found, Forest Service manual direction will be followed.

153. Encourage utilization of the most energy efficient sources to obtain marketable, common variety mineral materials.

154 Establish and maintain an inventory of common variety materials within the Forest.

155 Identify common variety material sites needed for Forest purposes and rank each for development.

156. Quarry material, in excess of Forest needs, will be available for public use by permit

157. Identify common variety material sites available for public use and rank each for development.

158. For each common variety materials site, prepare a development and rehabilitation plan prior to development and use

#### 4.5.2.13

##### Lands

159. Parcels of Forest land will be identified as suitable for exchange (in conformance with the Forest's Land Adjustment Plan to be developed after approval of the Forest Plan) and will be managed as a potential land exchange base. These parcels will be economically 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 will be reduced as follows:

- a. Authorize only temporary uses through special use permits
- b. Existing permits which encumber the land will be terminated as opportunities arise.
- c. These lands will be managed for a range of multiple use objectives and outputs, but investments will be limited.

160. Participate with BLM in considering possible boundary adjustments along the Forest's western boundary.

161. In areas where the Forest is the predominate landowner, use the following actions:

- a. Emphasize acquisition of "inholding lands" to improve administration, reduce conflicts in use, and reduce costs related to right-of-way acquisition and landline survey.
- b. Emphasize landline surveys that support all resource programs and resolve trespass.
- c. Emphasize acquisition of rights-of-way for public access and to support resource programs.
- d. Limit Forest land use to benefit National Forest programs, or when in the National interest.
- e. Emphasize acquisition of land in key areas to protect fish and wildlife habitat.

162. In areas where the Forest is the minority landowner:

- a. Exchange 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 suspected trespass.
- c. Emphasize acquisition of rights-of-way to support resource programs, but coordinate access with other landowners
- d. Make the Forest's land use priority that which serves private, local and State government goals and resolves conflicts.
- e. Cooperate with other landowners to encourage protection of fish and wildlife habitat on lands of other ownerships.

163 Discourage unwarranted expansion of peripheral boundaries of existing townsites.

164. Whenever conversion of important farmland, range, forest or wetland to other uses is proposed by actions or programs of other agencies or by licensing, permitting or approval of a Federal agency, advocate retention of these lands, unless other needs clearly override the benefits.

165. Within a reasonable time period, take appropriate criminal and civil action and resolve all cases of unauthorized occupancy and use.

166 Proposed sites for standard FM or television broadcast stations and radar stations will be separated from service-type radio installation sites by at least one air distance mile

167. Require developers, who propose major projects with short turnaround time, to pay for desired services. Projects planned with adequate advance notice will be accomplished through normal planning/budgeting process as priorities and funds permit

168. Encourage licensee acquisition of private lands within areas withdrawn by FERC.

169. Before considering land exchange, use purchase authority to acquire lands or interest in lands important for wilderness, wildlife or recreation.

170. Discourage conversion of prime farmland, forest range and wetlands to other uses.

171 Improve administration and management efficiency through land ownership consolidation and acquisition of identified key parcels. Emphasis will be directed toward cost-effective cases which will reduce management costs, facilitate protection and increase production of resource commodities.

172. Utilize land exchange authority to acquire lands, or interest in lands, important for wilderness, wildlife, or recreation.

173. Acquire permanent easements for all system roads. Recommend condemnation, if necessary.

174. Grants of right-of-way for roads and utilities will utilize common corridors, where feasible.

#### 4.5.2.14

#### Hydroelectric Development

175. Encourage licensee acquisition of private lands within areas withdrawn by FERC, where beneficial for resource protection.

176. During power project licensing procedures, licensees will be responsible for development, operation, maintenance, and replacement of recreational facilities, the need for which is, or was, project related

177. Require environmentally essential studies on all projects be completed and signed prior to issuance of 4e letter

178 On all projects, require essential studies, plans and agreements be completed and approved prior to a Forest Service Special Use Authorization (SUA).

179. Mitigation for loss of public resources resulting from hydroelectric project development, will be borne by the licensee. Included, as applicable, will be compensation to the Forest for lost wildlife habitat, timber, commercial forest land, cultural resources, fishery values, visual resources and recreational opportunities

180. All new powerline installations of 35 KV and less shall be underground, where technically feasible and desirable for resource protection, as determined by an environmental analysis. The Forest will actively pursue undergrounding of existing powerlines, where economically feasible and desirable for resource protection, as determined by an environmental analysis.

181. Bury new penstocks where feasible and desirable for resource mitigation, as determined by an environmental analysis.

182 Insure that EISs and/or EAs for hydroelectric projects evaluate and propose mitigation measures for secondary, and/or side effects of projects, such as crew housing, recreational needs and law enforcement problems.

183. Request cooperative assistance in revising the Forest's Land Management Plan direction for management area impacted by hydroelectric project

development. This should occur with development of the Recreation Plan. This revision should also show indirect resource losses.

- 184 During the project planning phase, consider the need for construction of trails, roads and/or recreational facilities prior to starting project development. The intent is to maintain or enhance current use and mitigate adverse impacts on recreation during construction.
- 185 Licensee will adopt the Forest's design motif and standard details to coordinate recreational visual standards throughout the Forest.
186. Facility signs will be made by the licensee in coordination with Forest standards and design motif.
- 187 Transmission lines, switchyards and access roads are considered direct impacts of the project and are evaluated with the other project facilities and documented in the environmental assessment or EIS.
188. For an Environmental Assessment, cumulative effects (hydroelectric-related) for more than one project are to be addressed in the drainage in which they occur, starting from the last point on the stream where any impacts may cease or are not evident and include all the area upstream to the point of diversion.
- 189 All new water development project areas will be considered for reclassification into "Developed Recreation" analysis areas. Reclassified analysis areas will be studied for required levels of development, new permitted uses, special conditions and other special management requirements or stipulations.
- 190 Where withdrawals are no longer needed, request applicants to relinquish them.
191. Tunnel muck in excess of Forest Service and developer's needs will be available for public use by permit.
192. The signing of a Decision Notice and issuance of a Special Use Authorization may occur simultaneously.

#### 4.5.2.15

##### Cultural Resources

- 193 Inventory and evaluate cultural resources, giving priority to areas where land-disturbing activities are planned or likely.
194. Pending completion of forestwide inventory and evaluation, conduct a cultural resource survey adequate to make a determination of effect in all areas where land disturbing activities are planned, pursuant to 36 CFR 800.

195. Evaluate identified properties. Provide for nomination of sites to the National Register as appropriate.

196. Contribute to a system of natural history examples throughout the eastside foothills and southern Sierra Nevada Range
197. Coordinate site identification, evaluation and management with concerned local Native Americans.
198. Coordinate Forest management practices to assure local Native Americans have access to and use of traditional food, medicinal and basketry resources
199. Take measures to protect cultural resources by issuing Archaeological Resources Protection Act (P.L. 95-96) permits for excavation and/or removal. Emphasize criminal and civil penalties for unauthorized removal or disturbance; monitor impacts to and condition of properties; provide physical protection measures; mitigate impacts, provide for adaptive reuse; and maintain locational confidentiality.
- 200 Plan Forest projects so impacts to significant cultural resource sites are avoided or develop appropriate and adequate mitigation plans where impacts are unavoidable
- 201 Priority will be given to preservation and maintenance, as opposed to removal of all historic structures.
202. Update the Forest's Cultural Resource Overview on a 5-year basis.
203. Remove backlog of unevaluated cultural resource properties. Target a specific number of Class II properties for evaluation each year. Nominate properties to National Register of Historic Places
- 204 Consult with California State Historic Preservation Office in developing management plans for all significant (Class I) properties.
205. Provide a program of cultural history interpretation.

#### 4.5.2.16

##### Transportation and Facilities

206. Improve the arterial and collector road system to emphasize economic efficiency, user safety and protection of adjacent resources
207. Replace or rehabilitate major structures to support planned production activities or high use areas.
- 208 Build transportation system to standards that support planned uses and activities.

209 All system roads are assigned to one of five maintenance levels, and will be maintained and operated in accord with established road management objectives, signed by the District Ranger, on file at the District and Supervisor's headquarters.

210. Controlled use of the road system including road closures, may be triggered by:

- a Wildlife protection
- b. Snow or adverse weather
- c. Hazardous fire conditions
- d. Need for a full range of recreational facilities
- e. Protection of private interests
- f Mining claim access.
- g. Protection of sensitive resources.

211 Road use will be limited by posted weight limits and special use (haul) seasons.

212 Encourage mass transit opportunities to major recreational destinations.

213. The arterial road system will be developed to an all-weather standard

214 Build facilities to support planned management activities and public services.

215 Forest Service management goals, with respect to owned or leased buildings, are to:

- a. Discourage and eliminate housing for year-round occupancy.
- b Meet all applicable air and water quality standards at all administrative and public service facilities.
- c Remove, repair or replace all features adversely affecting or endangering the health and safety of Forest Service personnel.
- d. Locate new administrative facilities for maximum economic efficiency and resource management needs.

4 5 2 17

#### Air Quality

216 Avoid cumulative impacts to air quality by coordinating prescribed burning activities within the Forest, with burning activities conducted by others.

217. Mitigate fugitive dust impacts on air quality by including dust abatement as a requirement for all construction activities that have potential to generate dust.

218. Avoid prolonged effects from prescribed burning activities on air quality by burning only on AQCB - approved burn days when satisfactory wind dispersion conditions prevail.

219. Participate with AQCB to qualitatively define air quality control regulations and guidelines and effects of air quality on the Forest, from sources outside the Forest.

220. Obtain appropriate permits prior to conducting prescribed burning activities.

#### 4.5 2.18 Protection

221. Use natural fire management to maintain wilderness ecosystems

222. 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

223. Prescribed fire can be utilized to enhance wilderness values

224. Throughout the fire management plan, identify areas and conditions where unplanned ignitions will be allowed to burn and where confine, contain and control suppression strategies will be used to meet management objectives.

225. Encourage adequate fire prevention, fire-safe construction and presuppression systems on private land to be developed in wildfire-prone areas

226. Increase fire prevention, presuppression, fuelbreak systems and fire safety programs on Forest land.

227. Reduce activity fuels to acceptable levels in a cost effective manner. Reduce natural fuels as part of other resource projects.

228. Encourage cooperation and coordination with appropriate fire management agencies.

229. Provide intensive law enforcement.

230. Incorporate air quality management considerations into fire management.

- 231. Emphasize a chaparral management and natural fuels reduction program that has multi-resource benefits, as well as meeting fire management objectives
- 232 Disposal of activity fuels will be economically feasible and commensurate with present and future fire risk hazard.
- 233. Fuelbreak systems will be completed in conjunction with timber harvest and range improvement projects.

4 5 3

Applicable to All Analysis Areas in Developed Recreation Management Area 1

- 234. Increase the number of camp units under the user fee system by at least 5% by 2000.
- 235 Permit day-only tie-up of pack and saddle stock no closer than 100 feet to lakes and streams, except in the Bass Lake area.
- 236. Allow overnight tie-up or tethering of pack and saddle stock no closer than 100 feet to lakes, streams or campsites, except in the Bass Lake, Huntington Lake, Shaver Lake and Dinkey Creek Analysis Areas, where overnight tie-up of pack, and saddle stock is prohibited.
- 237. Conduct regulated timber harvest where compatible with management standards and guidelines.
- 238 Conduct natural fuels reduction
- 239 Float aircraft will not be allowed on lakes or reservoirs.
- 240. Complete a study in the Bass Lake, Huntington Lake and Dinkey Creek areas to identify structures, other than the residences in recreational tracts, which have not already been identified for management activity. Notify existing permittees of requirements 10 years in advance of any planned removal.

4 5 4

Applicable to Developed Recreation Analysis Area 2 (Merced River Canyon)

- 241. Coordinate with other agencies in administering whitewater rafting permits on Merced River

4 5.5

Applicable to Developed Recreation Analysis Area 14 (Fish Camp)

- 242. Construct additional parking area for winter recreation in Fish Camp area.
- 243 Designate snowplay and cross-country ski areas.

- 244. Retain current capacity of Summerdale Campground and maintain its facilities at Development Level 3.

- 245. Limit overnight visits of a party to 7 consecutive nights in Summerdale Campground.

- 246. Maintain Camp Green Meadows at current capacity. Encourage year-round use of the facility.

- 247. Limit over-snow vehicles to designated routes and areas only.

4 5 6

Applicable to Developed Recreation Analysis Area 17 (Bass Lake)

- 248. Maintain recreational facilities at standard levels.
- 249 Encourage Madera County to continue limiting boat speeds to 40 mph from 8 a.m. to 8 p.m., and 5 mph from 8 p.m. to 8 a.m.
- 250. Encourage Madera County to limit maximum density of boats to one boat/4 acres of lake surface.
- 251. Restrict overnight boat mooring or anchoring on waters administered by the Forest to designated mooring sites or locations authorized by special use permit.
- 252 Allow limited expansion of boat dock, restaurant and grocery services at The Forks and Wishon Resorts. Maintain overnight facilities at present capacities
- 253. Exchange land occupied by Summit Expeditions under current special use permit.
- 254. Maintain Emerald Cove and Sky Lakes Camps at their current capacity, emphasizing short-term use by organized groups or individuals. Require upgraded facilities and more year-round use.
- 255. Increase day-use parking capacity 50%.
- 256. Increase overnight campground capacity to 2,500 PAOT.
- 257. Prohibit overnight pack and saddle stock closer than 1/4-mile to the lakeshore, Willow Creek, and any Forest-developed recreational facilities. Use closer than 1/4-mile is prohibited, except under special use permit.
- 258. Restrict or eliminate exclusive individual special uses that interfere with general public use and enjoyment of the lakeshore.
- 259. Construct a public day-use site for picnicking, swimming and fishing in the Willow Creek area.

260 Limit over-snow vehicles to designated routes and areas

#### 4.5.7

Applicable to Developed Recreation Analysis Area 28 (Mammoth Pool)

261. On Mammoth Pool Reservoir, maximum boat speed is 5 mph from 8 p.m. to 6 a.m. Between 6 a.m. and 8 p.m. maximum boat speeds are:

- a. September 11 to April 30 20 mph
- b. May 1 to June 15: Reservoir is closed to boating
- c. June 16 to June 30: Limit boat speeds to 20 mph.
- d. July 1 to September 10: 35 mph between dam and the narrows above China Bar Campground; 20 mph above the narrows.

262. Maintain China Bar Boat Camp at current capacity.

263. Acquire Fuller Meadow for future public use.

264. Maintain all developed recreational facilities at standard levels.

265. Extend boat ramp to allow low water access during early spring and late fall.

266. Dam road and boat ramp will remain closed from May 1 through June 15, except for use by licensee and administrative vehicles.

#### 4.5.8

Applicable to Developed Recreation Analysis Area 47 (Huntington Lake)

267 Limit motorboat speeds to 35 mph. For user safety, designate lower speed limits. Administrative boats are exempted.

268. Limit all expansion of overnight PAOT to that approved by existing project Environmental Assessments until completion of Huntington Lake Area Composite Plan.

269 Permit snow plowing on permittee roads under the following conditions:

- a. Roads must be constructed to a standard that allows snowplowing
- b. Since the county road up to Deer Creek Tract access road near Lakeshore Resort has been plowed for many years, those recreational residence tract roads serviced by this portion of the county road may be plowed all winter.

- c. From the Deer Creek access road to the dam, permittee roads may be plowed from first snow through January 5 and again starting the weekend before Easter, provided snow is less than 2 feet deep.

270. Remove guest cabin on Lot 89 in Huckleberry Tract and Forest Service cabin at Billy Creek to avoid conflicts with policy and location in the public use areas.

271. Provide additional boat launching facilities.

272. Increase commercial boat slips and/or moorings only for short-term use. Emphasize slip development over open mooring.

273. Complete analysis and plan for Huntington Lake Recreation residence boat dock facilities by July 1, 1992. Adjust orientation and construction styles of docks to minimize impacts on the shoreline and lake, and other recreational uses of these areas. Tract associations will manage the docks for members only.

274. Prohibit pack and saddle stock closer than 1/4 mile to the lakeshore and any Forest Service developed recreational facilities. Use closer than 1/4 mile is prohibited, except under special use permit.

275. Reserve area between the dam and Lakeview Cabins for future recreational use. Encourage licensee to develop needed facilities as a condition of any project relicensing

276. Require Sierra Summit to provide parking and vehicle storage only during summer season. Require other permittees to use this parking area, where their own space is limited and causing traffic congestion

277. Limit over-snow vehicles to designated routes and areas.

278. Permit boat mooring and docking up to 14 days between July 1 and Labor Day, except at special use sites where limits are as specified in authorizing permits.

279. Encourage regional mass transit to Sierra Summit during winter months.

#### 4.5.9

Applicable to Developed Recreation Analysis Areas 45 and 46 (Florence/Edison Lakes)

280. Permit boat speeds up to 15 mph Prohibit towing of aqua-planing devices

281 Limit overnight visits to 7 consecutive nights at boat camps.

- 282 Improve surface of Edison and Florence Lake roads as necessary for resource protection and user safety.
283. Discourage use of Edison and Florence Lake roads by trailers and motorhomes. Allow unrestrained access to any vehicle or combination of vehicle and towed trailer up to 40' long. Access by vehicles or combinations over 40' long will be by special permit only.
- 284 South of San Joaquin River, retain Mono Hot Springs in a near-natural condition to ensure availability of the springs for traditional Native American use.
- 285 Allow over-snow and helicopter access to resorts during winter months.
286. In power project licensing or relicensing of any project in excess of 5mw installed capacity, advocate that the project licensee remove snow from and open Kaiser Pass Road to public use by Memorial Day weekend in years when snowfall is less than 120% of normal, as measured at the Kaiser Meadow Snow Course on April 1.
- 287 Limit over-snow vehicles to designated routes and areas.
288. Encourage or develop regularly scheduled regional public transit to Florence and Edison Lakes
- 289 Allow no regulated timber harvest. Timber damaged by a catastrophic event may be salvaged if an environmental analysis indicates its removal is feasible and environmentally valid.
- 4 5 10  
Applicable to Developed Recreation Analysis Area 36 (Shaver Lake)
- 290 Exchange Dorabelle Campground and two other lakeshore properties, provided their use will remain dedicated to public recreational facilities. Until exchange with licensee occurs, manage Dorabelle at Development Level 4.
291. Advocate retention of licensee's lands for general public recreation.
- 4 5.11  
Applicable to Developed Recreation Analysis Area 55 (Courtright/Wishon Reservoirs)
- 292 Limit boat speeds to 15 mph. Prohibit aqua-planing devices.
293. Limit overnight visits to 7 consecutive nights at boat camps
- 294 Maintain primitive and semiprimitive motorized and nonmotorized recreation by closing roads to general two-wheel traffic upon activity completion.
- 295 Prohibit construction of private boat docks at Courtright Reservoir.
- 296 Restrict additional commercial recreational special uses or services.
297. Allow no regulated timber harvest. Timber damaged by a catastrophic event may be salvaged if an environmental analysis indicates its removal is feasible and environmentally valid.
- 4.5.12  
Applicable to Developed Recreation Analysis Area 65 (Pine Flat Reservoir)
298. Renegotiate agreement with Corps of Engineers for recreational administration at Pine Flat Reservoir.
- 299 Maintain Forest's recreational sites at Development Level 3.
300. At designated locations which have been fireproofed, limit overnight camping in undeveloped areas to 4 nights
301. Allow noncommercial group activities, provided groups exceeding 25 persons furnish their own toilet and sanitation facilities at locations where such facilities are not sufficient.
302. The Kings River Special Management Area management plan will establish limits of recreational use and acceptable change on the river.
- 4 5 13  
Applicable to All Dispersed Recreation Analysis Areas in Management Areas 2 and 11
303. Maintain semiprimitive recreational opportunities where they now occur by closing roads, except designated OHV routes, immediately following project activities.
304. Where possible, increase the acreage of primitive and semiprimitive recreation by closing unneeded local roads.
305. Allow cross-country, over-snow vehicle travel, except in areas where use is prohibited or restricted to designated routes or areas provided there are more than 6" snow cover and vehicle tracks do not touch the ground.
- 306 Designate 4WD and trailbike route termini at popular lake and stream locations. These termini will normally be a minimum of 300 feet to a

maximum of 1/4 mile from the attraction, and will have parking facilities with vehicle controls

- 307. Prohibit picketing or tethering of stock in meadows and overnight tie-ups within 100 feet of lakes, streams and campsites.
- 308 Provide corrals or hitching rails for pack and saddle stock in places where tie-up, hobbling or turning them loose is causing resource damage or user conflicts. Require such facilities to be used and that users bring sufficient feed for their stock.
- 309. Provide interpretive services, primarily brochures, maps and signs.
- 310 Restrict enduros to established travel routes in areas of light public use and to a time of year when interference with other activities and chance of environmental damage is minimized.
- 311. Regulated harvest is allowed in Analysis Areas 21, 23, and 58. Timber management is limited to salvage harvest following catastrophic events in Analysis Areas 3, 18, 48, 52 and 66.

4.5.14

Applicable to Analysis Areas 3 and 48 in Management Area 11

- 312. Construct trail/backcountry style bridges across South Fork Merced River to make river trail traversable year-long by hikers and horseback riders
- 313. Provide for expansion of Sierra Summit Ski Area in vicinity of Red Mountain near Strawberry Lake.

4 5 15

Applicable to All Timber Analysis Areas in Management Area 4

- 314 Close unneeded local roads to public use. Consider these roads for possible designation as OHV routes prior to closure
- 315. Allow cross-country, over-snow vehicle travel, except in areas where use is restricted to designated routes or areas, provided there are more than 6" snow cover and vehicle tracks do not touch the ground.
- 316. Allow enduros only on designated travel routes and require a special use permit for such events.

4.5.16

Applicable to Analysis Areas 22 and 49 in Management Area 4

- 317. Establish a 200-foot zone on each side of all reaches of tributaries to Portuguese and Cow Creeks where Lahontan cutthroat trout currently occur (January 1,

1989) 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 streamcourse.
- 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 streamcourses 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 streamcourses will be with materials other than petroleum products and recommended by a fisheries biologist.
- f. Ephemeral channels may be crossed with equipment after consultation with a fisheries biologist
- g Prohibit drafting in or above stream reaches currently supporting pure populations of Lahontan Cutthroat Trout

4.5.17

Applicable to Analysis Area 70 in Management Area 9

- 318. Develop and implement a fuels reduction plan for Nelder Grove area by 1995.
- 319. Designate Nelder Grove a special interest area stressing historic, botanic and scenic features
- 320. Adopt Nelder Grove management plan as part of the Forest Plan and develop visitor facilities centers and trails called for in the Nelder Grove Plan.

4 5.18

Applicable to Analysis Area 15 in Management Area 4

- 321. Issue a 10-year permit for Camp Redwood specifying retention of tent platforms only, maintaining capacity at present level, and resolving health and safety problems.

4.5 19

Applicable to Analysis Area 35 in Management Area 4

322 To ensure continued availability of redbud and other plants for traditional Native American uses, coordinate vegetation manipulation projects in Jose Basin with the local Native American community.

4.5.20

Applicable to Analysis Area 75 in Management Area 9

323. Manage Crater Lake Meadow area to recognize its geological features

4.5.21

Applicable to Analysis Area 61 in Management Area 4

324. Close roads not necessary for administrative purposes in the area south of Rancheria Creek to maintain integrity of the Spanish Lakes OHV route.

4.5.22

Applicable to Analysis Area 73 in Management Area 9

325 Designate McKinley Grove a special interest area stressing botanic and scenic features.

4.5.23

Applicable to All Front Country Analysis Areas in Management Area 5

326. Close unneeded roads to motorized use to establish more areas for hiking, horseback riding, 4WD, trailbike use and other forms of recreation not normally associated with areas easily accessed by 2-wheel drive.

327 Maintain semiprimitive motorized and nonmotorized recreation where they now exist by closing roads immediately following project activities.

328. Projects will be planned to consider management of chaparral and associated ecosystems to increase multi-resource benefits, while continuing with reduction of wildfire conflagrations.

329. Chaparral management in Jose Basin and Sycamore Creek drainage (See Fire Element Map) will be given high priority for reducing buildup of naturally occurring fuels

4.5.24

Applicable to Analysis Area 1 in Management Area 5

330 Establish historic railroad logging special interest area at old Trumbull Peak Incline on Merced River in conjunction with Stanislaus National Forest.

4.5.25

Applicable to Analysis Area 29 in Management Area 5

331. Limit boat speeds to 35 mph on Redinger Lake.

332. Provide Development Level 3 recreational facilities at Kerckhoff Lake.

333. Restrict overnight camping to designated sites at Redinger and Kerckhoff Lakes.

4.5.26

Applicable to All Analysis Areas in Management Area 12

334. Manage special management area according to the direction established in special management area plan.

335. Allow no new special use permits within this special management area until completion and approval of management plan.

336. Hydroelectric power development is prohibited, except through specific authority of Congress

337. Allow no regulated timber harvest. Timber damaged by a catastrophic event may be salvaged if an environmental analysis indicates its removal is feasible and environmentally valid.

338 Allow no new mining claims.

4.5.27

Applicable to All Wilderness Analysis Areas in Management Area 3

339. Develop wilderness management plans utilizing limits of acceptable change

340. Restore impaired wilderness resources, managing or limiting use, as necessary.

341 Locate campsites more than 100 feet from lakeshores, streams and trails, terrain permitting.

342 Advocate and enforce "pack-it-in, pack-it-out" program.

343. Allow discharging of firearms only in emergencies or for taking wildlife as permitted under State game laws.

344. Wheeled mechanical devices used for transporting people (except handicapped), camping gear or game are prohibited regardless of the method used to move the device.

345. Construct a moderate amount of new trails annually. Complete trail rehabilitation by 2010, emphasizing resource protection, safety and visitor dispersal.

346. Signs will be rustic and mounted on trees, rocks or native wood posts. Signing and trail blazing will be done only as necessary to provide for progressive travel. Other than passes, features will not be identified with signs.

- 347 Trail bridges crossing major drainages must be constructed of materials and by methods that will create the least long and short-term impact.
348. Consider efficiency and aesthetics when proposing resource protection improvements made of materials not native to site or area.
349. Locate wilderness ranger and trail crew camps at least 200 feet from main trails, public campsites, streams and lakeshores.
350. Prohibit additional tables and benches and maintenance of existing ones.
351. Remove snow survey sites when they can be correlated with sites outside Wilderness. If essential for safety purposes, allow cabins associated with snow measurement sites to remain in Wilderness until snow courses are correlated with and removed to sites outside Wilderness.
352. Prohibit loose herding of pack and saddle stock, except where area is signed
- 353 Prohibit picketing or tethering of stock in meadows or overnight tie-up within 100 feet of lakes, streams or campsites
354. Allow insect and disease infestations to run their natural courses, unless unacceptable loss will occur to wilderness resource, resources of adjacent lands, livestock or situation is hazardous to human health and welfare
- 355 Coordinate with other involved Federal and State agencies to monitor cloud seeding practices and their impact on Wilderness.
356. Require removal of aircraft wreckage.
357. Contact military aircraft bases every 2 years to discourage low flights over Wilderness.
- 358 Inventory all structures within Wilderness, appraise their historic value, and determine if needed for management purposes
359. Coordinate with CDFG on their aerial fish stocking program.
360. Maintain structural range improvements necessary to effectively manage range resources and protect wilderness values.
361. Determine the role of fire in the wilderness ecosystem and evaluate the need for applying wilderness fire policy in the John Muir, Ansel Adams, Kaiser, Dinkey and Monarch wildernesses. The evaluation will consider use of planned and unplanned ignitions and the options to use confine, contain or control strategies for suppression of wildfire.
362. The visual quality objective is Type I Visual Condition.
- 363 Commercial and noncommercial competitive events and events established for fund-raising (such as runs, hikes and trail rides) are incompatible with Wilderness and are not permitted.
364. Prohibit filing of new mining claims in designated Wilderness areas.
365. Minimize impacts of all mining activity on the wilderness resource.
366. Eliminate invalid mining claims and unauthorized occupancy.
- 4.5.28  
Applicable to All Wilderness Analysis Areas Except 39 in Management Area 3 (John Muir, Ansel Adams, Dinkey Lakes, Monarch)
367. Limit party size and number of stock per party to a level that protects social and natural resource values. The level may vary within or between Wildernesses.
368. Limit overnight visits to 14 days in each Wilderness.
369. Permit maintenance of existing CDFG stream flow-regulation dams, weirs and control gates in Ansel Adams Wilderness.
370. The Pacific Crest Trail Management Plan and Management Direction is incorporated into this Plan as part of the standards and guidelines
371. Avoid any development at Blayne Hot Springs that will interfere with traditional Native American use of the spring
- 4.5.29  
Applicable to Wilderness Analysis Area 39 in Management Area 3 (Kaiser)
372. Limit party size and number of stock per party to a level that protects social and natural resource values. The level may vary within or between Wildernesses
373. Limit overnight visits to 7 days.
374. Prohibit overnight camping closer than 200 feet to Upper Twin and Nellie Lakes.
375. Prohibit pack and saddle stock closer than 1/4 mile to Jewell, Campfire, Walling, Bill, Bobby and Bonnie Lakes. Use closer than 1/4 mile is

prohibited unless covered under a special use permit.

376. Issue no additional commercial packer or commercial backpacking permits, except for cross-country skiing activities.

377. Establish a Research Natural Area for white fir/red fir in Home Camp Creek area.

**SECTION 4.6 - Summary of Acreage Distribution by Management Prescription and Areas**

**TABLE 4.01 - ACREAGE DISTRIBUTION BY MANAGEMENT PRESCRIPTION AND 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		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			138	155	20	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	200		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.  
 [5] Includes both dispersed no harvest and dispersed with harvest

**SECTION 4.7 - Forestwide Table of Commodity Outputs and Costs**

**TABLE 4.02 - 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
<b>RECREATION</b>								
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, 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]	249.0			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
<b>WILDLIFE AND FISH</b>								
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	69
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			90.0	90.0	95.0	95.0	110.0
<b>RANGE</b>								
Grazing (M AUM)	35.0	38.1	40.2	37.5	30 0	40 0	40 6	40.6
<b>TIMBER</b>								
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 (MAcres)	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] 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

TABLE 4.02 - 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
<b>WOOD PRODUCTS OTHER THAN SAWTIMBER</b>								
Fuelwood (M Cords)	22.5			22.5	22.5	22.5	22.5	22.5
Biomass (M MCF)	0			No Projection Made				
<b>WATER</b>								
Quality (MM Ac.Ft. at Mtg Objectives)	2,514	1,882	1,903	2,559	2,555	2,552	2,544	1,538
Increased Quantity (MM Ac.Ft.)	2,565	270	310	.060	.057	.054	.044	.035
Watershed Improvement (Acres)				226	226	---	---	---
<b>LANDS AND MINERALS</b>								
Minerals (Operating Plans)	21	53	69	15	18	20	20	20
Land Acquisition (Acres)	0	500	0	250	250	200	0	0
<b>TRANSPORTATION</b>								
Trail Const./Reconst. (Miles)	26	54	42	47	37	27	0	0
Road Construction (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			2720	2780	2805	2820	2825
<b>FACILITIES</b>								
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
<b>PROTECTION</b>								
Fuel Treatment (Acres) [2]	0	3000	2600	7020	6440	8090	6830	6310
(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
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
<b>HUMAN RESOURCES</b>								
Programs (Enrollees)	38	16	16	38	38	38	38	38
<b>TOTAL BUDGET (\$MM)</b>								
	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 4.03 - FORESTWIDE SUMMARY OF ESTIMATED ANNUAL OUTPUTS AND ACTIVITIES DURING FIRST FIVE DECADES**

ELEMENT/ACTIVITY	UNIT OF MEASURE	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
Cultural Resource Inventories	M Acres	70	35	---	---	---
Cultural Resource Evaluation	Sites	6	6	6	6	6
Visual Resource Inventory and Planning	M Acres	157.5	---	---	---	---
Visual Resource Improvement	Acres	538	532	280	168	---
Developed Recreation Use	M RVDs	1705	1875	2035	2215	2410
Dispersed Recreation Use	M RVDs	2096	2385	2652	2937	3331
Trail Construction	Miles	3 0	2 0	1.0	---	---
Trail Reconstruction	Miles	45 0	35 0	26.0	---	---
Wilderness Areas Management [1]	M Acres	527.9	527.9	527.9	527.9	527 9
Wilderness Use	M RVDs	462 8	518.3	567.6	617.0	617.0
Habitat Improvement - Threatened, Endangered, Sensitive Species [2]	Structures	20 0	20 0	---	---	---
Habitat Improvement-Wildlife	Acres	2000	2000	2000	2000	2000
Habitat Improvement-Fish	Acres / Structures	100.0	90.0	95.0	95.0	110.0
Range Administration	M Acres	102.7	101.4	101.8	107.0	118.8
Range Forage Improvement	Acres	---	---	---	---	---
Range Improvements, Maintenance	Acres	100.0	100.0	100.0	100 0	100.0
Grazing Use	M AUMs	37.5	38 5	40 5	40.6	40.6
Planting & Replanting	Acres	2990	2090	1875	1335	1220
<p>[1] Does not include 24,553 acres administrated by Inyo National Forest.                      [2] Recovery goals for federally-listed Threatened and Endangered Species and viable populations for Sensitive Species will be met by the end of the 2nd decade.</p>						
<p>Note: Decade 1 is the period 1991-2000. Decades 2-5 are projections only.</p>						

**TABLE 4.03 - FORESTWIDE SUMMARY OF ESTIMATED ANNUAL OUTPUTS AND ACTIVITIES DURING FIRST FIVE DECADES**

ELEMENT/ACTIVITY	UNIT OF MEASURE	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
Site Preparation for Natural Seeding	Acres	500	1165	1005	560	530
Release and Weeding	Acres	2065	2645	1750	1425	1220
Precommercial Thinning	Acres	2005	1460	2645	1750	1425
Live Volume (Solid) Chargeable	MM BF	88.0	88.0	88.0	88.0	88.0
Personal Use Firewood	M Cords	22.5	22.5	22.5	22.5	22.5
Watershed Improvement	Acres	22.6	22.6	-	-	-
Annual Water Yield	MM Ac. Ft.	2,559	2,555	2,552	2,554	2,538
Nonrecreation Special Uses	Cases	750	900	900	900	900
Property Boundary Location	Miles	59	23	10	4	3
Land Exchange	Acres	400	400	400	400	400
Land Aquisition	Acres	250	250	200	-	-
Mineral Leases and Permits	Operating Plans	15	18	20	20	20
Road Construction	Miles	17	6	2.5	1.5	0.5
Road Reconstruction	Miles	7	7	6	4	4
Treatment of Activity Fuels	Acres	4990	4720	5520	3680	3180
Treatment of Natural Fuels	Acres	1000	1000	1200	1500	1500
Fuelbreak Construction	Acres	702	20	20	20	20
Fuel Treatment Maintenance	Acres	1000	1000	1000	1000	1000

Note: Figures beyond 1985 estimated average annual amounts.

Note: Decade 1 is the period 1991-1999. Decades 2-5 are projections only.

4.8  
MANAGEMENT AREA PRESCRIPTIONS,  
PRACTICES, OUTPUTS, AND ACTIVITIES

4 8 1  
Management Area 1 (Developed Recreation, 75,631  
Acres)

This Management Area consists of Analysis Areas 2, 14, 17, 28, 36, 45, 46, 47, 51, 55 and 65. These units are land and water areas popular for recreation. Most have considerable amounts of capital investments in recreational facilities. Upper Kings River and a portion of South Fork Merced River have been designated by California Fish and Game Commission as wild trout streams. The Merced River has been inventoried, recommended and designated as a National Wild and Scenic River. Program emphasis is on developed recreation at appropriate levels of development and intensity (see management standards and guidelines). Rural and roaded natural recreational opportunities are stressed. Other very important considerations are water quality, visual conditions, and wildlife. Regulated timber harvest is allowed on suitable land where compatible with primary goals. The Kings River has been designated as a Wild and Scenic River.

Management prescriptions for this management area consist of the following general management prescriptions, forestwide management direction and applicable management standards and guidelines. Also shown is a list of activities and outputs [1] expected from applying the prescriptions. For specific fire management direction see Appendix E.

The following general management prescriptions and acres in each prescription apply to this management area in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence.

Prescription	Acres	Resource situation
1. Developed recreation (includes water area)	75,631	See Alternative A map. Analysis Areas 2, 14, 17, 28, 36, 45, 46, 47, 55 and 65.
2. Dispersed recreation	56,887	See Recreation Opportunity Class Objectives and Wildlife Element maps. Analysis Areas 2, 14, 17, 28, 36, 45, 46, 47, 55 and 65.

3. Wild and Scenic River Designated 3,840 See W&S Element map Analysis Area 2 and 65.

4. Land exchange (acquisition) [2] 80 See private land in Analysis Area 47

Land exchange (base) [3] 3,200 See definition in prescription to identify land for exchange.

5. Administrative site 238 See Administrative Site Resource map located in Forest Facility Master Plan.

6. Minimum-level management 14,430 See SOHA and Furbearer Element map. Analysis Areas 17,45,47,55 and 65. Analysis Areas 45, 46 and 55 leading to Florence/Edison Lakes and Courtright/Wishon Reservoirs.

7. Limited-timber yield 14,000 See Visual Quality Objective, Soil Sensitivity, SOHA and Furbearer and Soil Erosion Hazard Element maps. Analysis Areas 2, 14, 17, 28, 36, 45, 47, 55 and 65.

8. Modified - timber yield 7,670 See Visual Quality Objective and Wildlife Element maps. Analysis Areas 1, 14, 17, 28, 36, 45, 47, 55 and 65.

9 Full-timber yield 3,030 See Alternative A map. Analysis Areas 14, 17, 28, 36 and 47. This is the residual that is left after prescriptions 3, 5, 6, 7 and 8 have been applied.

On this page, a prescription was identified for each Analysis Area. The following list identifies the Standard and Guidelines used in that Analysis Area. If there are conflicting Standard and Guidelines, the most restrictive will have precedence.

[1] Some outputs are measured only on a forestwide basis and therefore, are not listed here (see Forestwide Summary Table 4 03).

[2] Acquisition - Land suitable for wildlife, timber, or riparian purposes and identified to acquire.

[3] Base - Existing National Forest land available for disposal.

Standards & Guidelines	Applicable Areas
1 - 240	Analysis Area 2, 14, 17, 28, 36, 45, 46, 47, 55 & 65
241	Analysis Area 2
242 - 247	Analysis Area 14
248 - 260	Analysis Area 17
261 - 266	Analysis Area 28
267 - 279	Analysis Area 47
280 - 289	Analysis Area 45 and 46.
290 - 291	Analysis Area 36
292 - 297	Analysis Area 55
298 - 302	Analysis Area 65



**TABLE 4.04 - MANAGEMENT AREA 1: ESTIMATED AVERAGE ANNUAL OUTPUTS AND ACTIVITIES DURING NEXT FIVE DECADES**

OUTPUT / ACTIVITY	UNIT	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
Trail Reconstruction	Miles	3.7	1.5	0.6	-	-
Trail Construction	Miles	0.2	0.4	0.2	-	-
Habitat Improvement - Fish	Acres / Structures	10	9	9.5	9.5	11
Range Forest Improvement	Acres	-	-	-	-	-
Range Improvements, Maintenance	Acres	-	-	-	-	-
Range Administration	M Acres	6.4	6.4	6.4	6.4	6.4
Planting & Replanting	Acres	175	115	105	75	70
Sire Preparation for Natural Seeding	Acres	30	65	60	30	30
Release & Weeding	Acres	120	150	150	100	80
Precommercial Thinning	Acres	110	85	150	100	80
Watershed Improvement	Acres	38	-	-	-	-
Treatment of Activity Fuels	Acres	285	270	315	205	180
Treatment of Natural Fuels	Acres	80	80	80	80	90
Fulebreak Construction	Acres	-	-	-	-	-
Fuel tTreatment Maintenance	Acres	5	5	5	5	5

48.2  
Management Area 2 (Dispersed Recreation, 33,609 Acres)

Management Area 2 consists of Analysis Areas 21, 23, and 58. These areas are used primarily for primitive and semiprimitive dispersed recreation and will remain generally nonroaded and undeveloped.

Primary emphasis for this management area is dispersed use, stressing semiprimitive nonmotorized and semiprimitive motorized recreation with Visual Condition Type III or better. Regulated timber harvest, grazing and wildlife management activities are allowed on suitable land. However, road construction will be held to a minimum and most new roads closed on completion of management activities to retain dispersed recreation. Use of existing 4WD and 2-wheel vehicle access routes into these areas will generally be allowed to continue.

The management prescriptions for this Management Area consist of the following general management prescriptions, forestwide management direction, and applicable management standards and guidelines. Also shown is a list of activities and outputs [1] expected from applying the prescriptions. For specific fire management direction see Appendix E.

The following general management prescriptions and acres in each prescription apply to this Management Area in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence.

Prescription	Acres	Resource Situation
1. Dispersed recreation	33,609	See Alternative A map. Analysis Areas 21, 23 and 58.
2. Minimum-level management	650	See SOHA and Furbearer Element map. Analysis Areas 21, 23 and 58.
3. Limited - timber yield	450	See Visual Quality Objective, SOHA and Furbearer, Soil Sensitivity, and Soil Erosion Hazard Element maps Analysis Areas 21, 23 and 58.

4. Modified-timber yield	1,030	See Visual Quality Objective Element map. Analysis Areas 21, 23 and 58.
5. Full-timber yield	640	See Alternative A map. Analysis Areas 21, 23 and 58.
6. Developed Recreation		See Alternative A map. Analysis Areas 21 and 58.
7. Administration Site		See Administrative Resource map located in Forest Facilities Master Plan.

On this page, a prescription was identified for each Analysis Area. The following list identifies the Standard and Guidelines used in that Analysis Area. If there are conflicting Standard and Guidelines, the most restrictive will have precedence.

Standards & Guidelines	Applicable Areas
2, 4, 14 - 20, 22 - 29, 31 - 54, 56 - 206, 208 - 211, 213, 216 - 220, 222 - 233, 303 - 311	All S&Gs listed here apply to Analysis Areas 21, 23 and 58.



[1] Some outputs are measured only on a forestwide basis and therefore, are not listed here (see Forestwide Summary Table 4.03).

**TABLE 4.05 - MANAGEMENT AREA 2: ESTIMATED AVERAGE ANNUAL OUTPUTS AND ACTIVITIES DURING NEXT FIVE DECADES**

<b>OUTPUT / ACTIVITY</b>	<b>UNIT</b>	<b>1991 - 2000</b>	<b>2001 - 2010</b>	<b>2011 - 2020</b>	<b>2021 - 2030</b>	<b>2031 - 2040</b>
Trail Reconstruction	Miles	2.2	1.2	1.3	-	-
Trail Construction	Miles	0.1	0.1	0.1	-	-
Habitat Improvement-Wildlife	Acres	50	50	50	50	50
Habitat Improvement-Fish	Acres / Structures	20	18	19	19	22
Range Forage Improvement	Acres	-	-	-	-	-
Range Improvements, Maintenance	Acres	-	-	-	-	-
Range Administration	M Acres	2.6	2.6	2.6	2.7	2.5
Planting & Replanting	Acres	25	20	15	10	10
Site Preparation for Natural Seeding	Acres	-	-	-	-	-
Release & Weeding	Acres	20	25	15	15	10
Precommercial Thinning	Acres	20	15	25	15	15
Treatment of Activity Fuels	Acres	45	40	50	35	30
Treatment of Natural Fuels	Acres	6	4	4	2	2
Fuelbreak Construction	Acres	61	2	2	2	2
Fuel Treatment Maintenance	Acres	100	100	100	100	100

Management Area 3 (Wilderness, 527,938 Acres)

Management Area 3 is comprised of Analysis Areas 20, 39, 40, 41, 42, 43, 44, 53, 54, and 62. It consists of the Forest's portion of Ansel Adams, John Muir, and Monarch Wilderness areas and entire Dinkey Lakes and Kaiser Wilderness areas. These areas vary in use from John Muir, which is one of the most heavily used areas in the country, to Monarch which is one of the most lightly used. Dinkey Lakes Wilderness is expected to become one of the more heavily used areas, based on past history prior to Wilderness status.

Most of this Area is at high elevations and receives the majority of the Forest's snowpack, a very important water source for hydroelectric projects, recreation, and irrigation. With many lakes and streams, water quality is also very important. There is considerable hydroelectric potential within Kings River and San Joaquin River systems, however, major portions of these rivers were on the National Rivers Inventory and now have been recommended for or designated as Wild and Scenic Rivers.

Other notable features include John Muir and Pacific Crest Trails, Paiute cutthroat trout populations in Starway and Sharktooth Creeks, Minarets Peaks of the Ritter Range, San Joaquin River canyons featuring Balloon Dome, a red fir/white fir research natural area, the terram in Kings River Canyon; and the extensive late successional stage forests.

The primary management emphasis is preservation and maintenance of wilderness character and values, high water quality, and options for future consideration of streams for National Wild and Scenic River status. Appropriate dispersed recreation with established capacities are very important, as is maintenance of habitat for late seral stage dependent wildlife and protection of the Paiute cutthroat trout. Grazing is allowed in suitable areas.

Management prescriptions for this management area consist of the following general management prescriptions, forestwide management direction, and applicable management standards and guidelines. Also shown is a list of activities and outputs [1] expected from applying the prescriptions. For specific fire management direction see Appendix E.

In those portions of Ansel Adams (formerly Minarets) and John Muir Wildernesses and all of Kaiser Wilderness designated as a Class I air quality area, visibility is the most sensitive indicator of air pollution. Visibility

monitoring in Yosemite National Park will be a proxy for trends in the Forest's wildernesses.

The following general management prescriptions and acres in each prescription apply to this management area in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence.

Prescription	Acres	Resource Situation
1. Wilderness	527,938	See Alternative A map. Analysis Areas 20, 39, 40, 41, 42, 43, 44, 53, 54 and 62
2. Wild and Scenic River		
Recommended	11,200	See Wild and Scenic River Element map.
Designated	2,560	Analysis Areas 20 and 54.
3. Research Natural Area [1]	1,200	See Alternative A map. Analysis Areas 7, 33, 41, 67 and 68.
4. Land exchange (acquisition)	560	See definition in prescription to identify land for exchange Analysis Area 54.

On this page, a prescription was identified for each Analysis Area. The following list identifies the Standard and Guidelines used in that Analysis Area.

If there are conflicting Standard and Guidelines, the most restrictive will have precedence.

Standards & Guidelines	Applicable Areas
22, 25, 31, 32, 53, 56, 58, 69 - 75, 76, 79, 80, 89, 90, 122, 123, 124, 132, 134, 136 - 150, 193, 194, 199 - 201, 203, 204, 216, 218, 221, 230, 339 - 366	All S&Gs listed here apply to Analysis Areas 20, 39, 40, 41, 42, 43, 44, 53, 54 & 62.
367 - 371	Analysis Areas 20, 40, 41, 42, 43, 44, 53, 54 & 62
372 - 377	Analysis Area 39.

[1] Some outputs are measured only on a forestwide basis and therefore, are not listed here (see Forestwide Summary Table 4.03).

**TABLE 4.06 - MANAGEMENT AREA 3: ESTIMATED AVERAGE ANNUAL OUTPUTS AND ACTIVITIES DURING NEXT FIVE DECADES**

OUTPUT/ACTIVITY	UNIT	1990 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
Trail Reconstruction	Miles	29.1	22.5	16.0	-	-
Trail Construction	Miles	2.0	1.2	0.6	-	-
Habitat Improvement - Threatened / Endangered, Sensitive Species	Structures	2.0	2.0	-	-	-
Range Administration	M Acres	8.5	8.5	8.5	8.5	8.5
Treatment of Natural Fuels	Acres	360	380	180	180	180



## Management Area 4 (General Forest, 316,290 Acres) [1]

Management Area 4 consists of Analysis Areas 4, 6, 9, 15, 19, 22, 24, 27, 30, 35, 37, 38, 49, 50, 51, 56, 60 and 61. The northeast portion of Analysis Areas 22 and 38 and Analysis Area 61 is nonroaded and undeveloped. However, the primary road system in remainder of area is in place. Recreation is mostly dispersed, stressing roaded natural recreation, and some semiprimitive motorized recreation. Developed recreational facilities are small and scattered throughout the area to accommodate use. The area is highly productive and well suited to timber, wildlife and range activities. Tributaries to Cow Creek and Portuguese Creek currently contain Lahontan cutthroat trout. Moderate amounts of sensitive and highly erosive soils occur in the area. Two notable redwood groves are located within the area.

Primary emphasis for this Management Area is regulated timber management, coordinated with wildlife needs, and maintenance and protection of sensitive soils. Designated OHV routes will remain open. Continued dispersed recreation, stressing roaded natural recreation, and maintenance of developed facilities are also management goals. Existing Lahontan cutthroat trout habitat and population will be maintained and protected as well as the Forest's sensitive plants. Range activities compatible with wildlife objectives are allowed on suitable land to maintain and improve forage conditions. Nelder and McKinley Groves of giant Sequoias will be studied for classification as special interest areas. Special recognition will be given Native American concerns when planning and conducting Forest activities in Analysis Area 35. Visual resources will be managed in accord with the Visual Resource Element Map. Wildlife habitat needs will be coordinated with management activities, as specified by standards and guidelines and the Wildlife Element Map.

Management prescriptions for this management area consist of the following general management prescriptions, forestwide management direction, and applicable management standards and guidelines. Also shown is a list of activities and outputs [2] expected from applying the prescriptions. For specific fire management direction see Appendix E

The following general management prescriptions and acres of each prescription apply to this management area in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence.

Prescription	Acres	Resource Situation
1. Full-timber yield [3]	101,170	See Alternative A map. Analysis Areas 4, 6, 9, 15, 22, 24, 27, 30, 35, 37, 38, 49, 50, 51, 56, 60 and 61. This is the residual that is left after prescriptions 2, 3, 7 and 8 are applied.
2. Modified - timber yield [3]	50,640	See Visual Quality Objective and Wildlife Element maps. Analysis Areas 4, 6, 9, 15, 22, 24, 27, 30, 35, 37, 38, 49, 50, 51, 56, 60 and 61.
3. Limited - timber yield [3]	140,680	See Visual Quality Objective and SOHA and Furbearer Element maps. Analysis Areas 6, 9, 15, 22, 27, 30, 35, 37, 38, 49, 50, 51, 56, 60 and 61.
4. Dispersed recreation	200,760	See Recreation Opportunity Class Objectives Element map. Analysis Areas 4, 6, 9, 15, 22, 24, 27, 30, 35, 37, 38, 49, 50, 51, 56, 60 and 61.
5. Administrative site	138	See Administrative Resource map located in Forest Facilities Master Plan
6. Land exchange (acquisition) [4]	2,150	See Forest Land Acquisition map.
Land exchange (base) [5]	11,640	See definition in prescription to identify land for exchange.
7. Developed recreation	327	See Alternative A map. Analysis Areas 9, 15, 22, 27, 35, 38, 50, 51 and 56.

[1] Includes CAS, non-forested and commercial forested land not suitable for timber management.

[2] Some outputs are measured only on a forestwide basis and therefore, are not listed here (see Forestwide Summary Table 4.03).

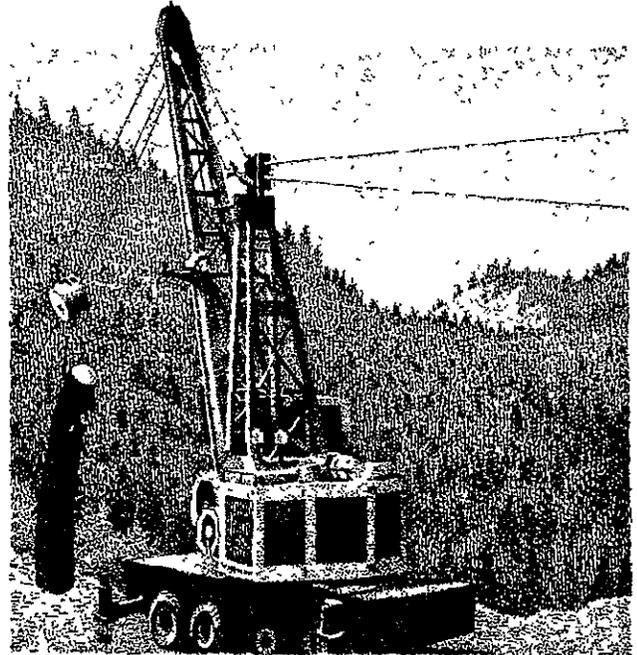
[3] Includes only CAS land.

[4] Acquisition - Land suitable for wildlife, timber or riparian purposes, and identified to acquire.

[5] Base - Existing National Forest land available for disposal.

8. Minimum - level 23,800 See SOHA and  
management [1] Furbearer Element  
map.

On this and the preceding page, a prescription was identified for each Analysis Area. The following list identifies the Standard and Guidelines used in that Analysis Area. If there are conflicting Standard and Guidelines, the most restrictive will have precedence.



Standards & Guidelines	Applicable Areas
1 - 33, 36 - 220, 224 - 233, 314 - 316	All S&Gs listed here apply to Analysis Areas 4, 6, 9, 15, 22, 24, 27, 30, 37, 38, 49, 50, 51, 56, 60 and 61.
317	Analysis Areas 22 and 49
321	Analysis Area 15
322	Analysis Area 35
324	Analysis Area 61

**TABLE 4.07 - MANAGEMENT AREA 4: ESTIMATED AVERAGE ANNUAL OUTPUTS AND ACTIVITIES DURING NEXT FIVE DECADES**

OUTPUT/ACTIVITY	UNIT	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
Trail Reconstruction	Miles	6.0	7.0	7.0	-	-
Trail Construction	Miles	0.2	0.3	0.1	-	-
Habitat Improvement - Threatened / Endangered, Sensitive Species	Structures	8.0	8.0	-	-	-
Habitat Improvement-Wildlife	Acres	500	500	500	500	500
Habitat Improvement-Fish	Acres / Structures	40	36	38	38	44
Range Forage Improvement	Acres	-	-	-	-	-
Range Improvements, Maintenance	Acres	70.0	70.0	70.0	70.	70.0
Range Administration	M Acres	43.2	43.2	43.4	45.5	45.5
Planting & Replanting	Acres	2665	1865	1675	1195	1090
Site Preparation for Natural Seeding	Acres	465	1090	935	525	495
Release & Weeding	Acres	1840	2360	1510	1250	1080
Precommercial Thinning	Acres	1790	1300	2360	1560	1270
Watershed Improvement	Acres	101	101	-	-	-
Treatment of Activity Fuels	Acres	4450	4210	4925	3285	2835
Treatment of Natural Fuels	Acres	475	475	475	475	505
Fuelbreak Construction	Acres	206	8	8	8	8
Fuel Treatment Maintenance	Acres	380	380	380	380	380

[1] Includes only CAS land.

4.8.5  
Management Area 5 (Front Country, 136,839 Acres)

Management Area 5 consists of Analysis Areas 1, 5, 8, 10, 12, 16 and 29. The area includes most of the low elevation foothill land in the Forest and many steep-walled canyons. Vegetation is primarily chaparral, with some areas of oak-grass, and a small amount of suitable timber land. Recreational uses are quite limited. Access varies from well-roaded, urban situations to barely accessible. Much of the area has high erosion hazard and very heavy fuels. Where slopes and soils permit, suitability for range and wildlife activities is high.

Primary management emphasis is on wildlife and range management activities, with adequate protection of watershed values on highly erosive soils. Fire protection and natural fuels reduction are very important. Multi-resource benefitting projects (wildlife, range and fire) are a management objective. Timber harvest is scheduled on land where slopes are generally less than 35%. Investments for future timber yields will be made only where risk of fire is comparable to that generally found in Management Area 4. Special recognition will be given to Native American concerns in Analysis Area 29 when planning and conducting Forest activities.

Management prescriptions for this management area consist of the following general management prescriptions, forestwide management direction, and applicable management standards and guidelines. Also shown is a list of activities and outputs [1] expected from applying the prescriptions. For specific fire management direction, see Appendix E.

The following general management prescriptions and acres in each prescription apply to this management area in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence.

Prescription	Acres	Resource Situation
1. Front country	136,839	See Alternative A map. Analysis Areas 1, 5, 8, 12, 16 and 29.
2. Dispersed recreation	11,292	See Recreation Opportunity Class Objectives and Wildlife Element maps. Analysis Areas 1, 5, 8, 10, 16 and 29.

3. Administrative site	155	See Administrative Site Resource map located in Forest Facility Master Plan.
4. Minimum-level management	4,070	See SOHA and Furbearer Element map. Analysis Areas 5, 12, 16 and 29.
5. Limited-timber yield	1,370	See Visual Quality Objective, Soil Sensitivity and Soil Erosion Hazard Element maps. Analysis Areas 5, 8, 10, 12 and 16.
6. Modified-timber yield	5,760	See Visual Quality Objective and Wildlife Element maps. Analysis Areas 5,8,10,12,16 and 29.
7. Full-timber yield	2,260	See Alternative A map. Analysis Areas 5, 8, 12, 16 and 29. This is the residual that is left after prescriptions 3,4,5 and 9 have been applied
8. Land exchange (acquisition) [2]	1,350	See Forest Land Acquisition map.
Land exchange (base) [3]	26,320	See definition in prescription to identify land for exchange.
9. Developed recreation	4	See Alternative A map. Analysis Areas 5, 8 and 29.

On this page, a prescription was identified for each Analysis Area. The following list identifies the Standard and Guidelines used in that Analysis Area. If there are conflicting Standard and Guidelines, the most restrictive will have precedence.

[1] Some outputs are measured only on a forestwide basis and therefore, are not listed here (see Forestwide Summary Table 4.03).

[2] Acquisition - Land suitable for wildlife, timber or riparian purposes, and identified to acquire

[3] Base - Existing National Forest land available for disposal.

**Standard & Guidelines**

**Applicable Areas**

1 - 29, 32 - 89,  
91 - 220,  
224 - 233, 326 - 329

All S&Gs listed here apply  
to Analysis Areas 1, 5, 8,  
12, 16 and 29.

330

Analysis Area 1

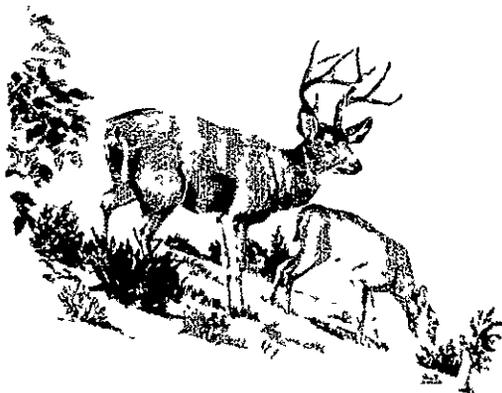
331 - 333

Analysis Area 29



**TABLE 4.08 - MANAGEMENT AREA 5: ESTIMATED AVERAGE ANNUAL OUTPUTS AND ACTIVITIES DURING NEXT FIVE DECADES**

OUTPUT/ACTIVITY	UNIT	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
Trail Reconstruction	Miles	3.0	2.3	1.1	-	-
Habitat Improvement - Threatened /Endangered, Sensitive Species	Structures	10.0	10.0	-	-	-
Habitat Improvement-Wildlife	Acres	300	300	300	300	300
Habitat Improvement-Fish	Acres / Structures	10	9	9.5	9.5	11
Range Forage Improvement	Acres	-	-	-	-	-
Range Improvements, Maintenance	Acres	30.0	30.0	30.0	30.0	30.0
Range Administration	M Acres	26.6	29.8	30.0	33.0	40.5
Planting & Replanting	Acres	125	90	80	55	50
Site Preparation for Natural Seeding	Acres	-	-	-	-	10
Release & Weeding	Acres	85	110	75	60	50
Precommercial Thinning	Acres	85	60	110	75	60
Watershed Improvement	Acres	20	50	50	-	-
Treatment of Activity Fuels	Acres	210	200	230	155	135
Treatment of Natural Fuels	Acres	2060	2060	2060	2060	2070
Fuelbreak Construction	Acres	435	10	10	10	10
Fuel Treatment Maintenance	Acres	515	515	515	515	515



4.8.6  
**Management Area 6 (Parcels Exterior to Forest Boundary, 620 Acres)**

Management Area 6 consists of Analysis Areas 11, 13, 25, 26 and 31. These are isolated parcels outside the main Forest boundary. Analysis Areas 25 and 26 no longer contain National Forest land. One parcel is utilized as an administrative site, the others are subject to land exchange.

Management emphasis is to retain the administrative site and continue to make the other parcels available for land exchange.

Management prescriptions for this management area consist of the following general management prescriptions, forestwide management direction, and applicable management standards and guidelines. For specific fire management direction, see Appendix E.

The following general management prescriptions and acres in each prescription apply to this management area in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence.

<u>Prescription</u>	<u>Acres</u>	<u>Resource Situation</u>
1. Administrative site	28	See Administrative Site Resource map located in Forest Facilities Master Plan.
2. Land exchange (base) [1]	310	See definition in prescription to identify land for exchange.
3. Front country	620	See Alternative A map. Analysis 11, 13, 25, 26 and 31.

On this page, a prescription was identified for each Analysis Area. The following list identifies the Standard and Guidelines used in that Analysis Area. If there are conflicting Standard and Guidelines, the most restrictive will have precedence.

<u>Standards &amp; Guidelines</u>	<u>Applicable Areas</u>
25, 29	Analysis Areas 11, 13, 31
53	Analysis Areas 11, 31
51, 66, 68	Analysis Areas 13, 31
85, 91	Analysis Areas 31
124	Analysis Areas 11, 13, 31
127	Analysis Areas 11, 13, 15, 31
133, 135 - 142	Analysis Areas 11, 31
144 - 151	Analysis Areas 11, 31
159, 162	Analysis Areas 11, 31
165	Analysis Areas 11
193 - 199	Analysis Areas 11, 13, 31
214, 215	Analysis Areas 13
219, 220, 226, 228	Analysis Areas 11, 31
52, 225	Analysis Areas 25, 26

[1] Base - Existing National Forest land available for disposal.

Management Area 7 (Experimental Forest, 3,200 Acres)

Management Area 7 consists of Analysis Area 57, Teakettle Creek Experimental Forest. The Experimental Forest was established for watershed research dealing with water quality and quantity. Vegetation consists primarily of virgin, mature red and white fir. It provides highly suitable habitat for late successional stage, dependent wildlife species. The area has high timber capability, but is unavailable for regulated harvest.

Management emphasis is to continue management as an experimental forest for watershed purposes under the guidance of the Pacific Southwest Forest and Range Experiment Station. The area will be managed in accord with its establishment report. Unregulated timber harvest may take place, when needed.

Management prescriptions for this management area consist of the following general management prescriptions, forestwide management direction, and applicable management standards and guidelines. For specific fire management direction, see Appendix E.

The following general management prescriptions and acres in each prescription apply to this management area in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence.

Prescription	Acres	Resource Situation
1. Experimental forest	3,200	See Alternative A map. Analysis Area 57.
2. Administrative site	1	See Administrative Site Resource map located in Forest Facility Master Plan.

On this page, a prescription was identified for each Analysis Area. The following list identifies the Standard and Guidelines used in that Analysis Area. If there are conflicting Standard and Guidelines, the most restrictive will have precedence.

Standards & Guidelines	Applicable Areas
25, 43, 53, 58 - 64, 68 - 69, 71 - 72, 74 - 77, 85 - 89, 91, 93, 120 - 129, 133, 139, 177 - 179, 182, 188, 193, 197, 199, 200, 210, 217, 220, 227, 230, 232	All S&Gs listed here apply to Analysis Area 57.



4.8.8

Management Area 8 (Experimental Range, 4,580 Acres)

Management Area 8 consists of Analysis Area 32, the San Joaquin Experimental Range. The area is used for research purposes, under the direction of the Pacific Southwest Forest and Range Experiment Station. The area also contains an administrative site and a blue oak-digger pine Research Natural Area.

The management emphasis is to continue use of the range for research by the Experiment Station and California State University, Fresno to continue managing the RNA in accord with its establishment report.

Management prescriptions for this management area consist of the following general management prescriptions, forestwide management direction, and applicable management standards and guidelines. For specific fire management direction, see Appendix E

The following general management prescriptions and acres in each prescription apply to this management area in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence

<u>Prescription</u>	<u>Acres</u>	<u>Resource Situation</u>
1. Experimental range	4,580	See Alternative A map. Analysis Area 32.
2. Research Natural Area	80	See Administrative Site Resource map located in Forest Facility Master Plan. Analysis Area 68.
3. Administrative site	2	See Alternative A map. Analysis Area 32.

On this page, a prescription was identified for each Analysis Area. The following list identifies the Standard and Guidelines used in that Analysis Area. If there are conflicting Standard and Guidelines, the most restrictive will have precedence

<u>Standards &amp; Guidelines</u>	<u>Applicable Areas</u>
17, 68, 125, 193, 199, 201, 209 - 211, 215, 218 - 220, 228, 230	All S&Gs listed here apply to Analysis Area 32

4.8.9

Management Area 9 (Special Interest Areas, 5,093 Acres)

Management Area 9 contains seven established special interest areas in Analysis Areas 34, 59, 69, 70, 71, 72 and 73. Analysis Area 34, Carpenteria Botanical Area was established as a special interest botanical area for Carpenteria californica. It is to be managed in accord with the establishment report. Analysis Area 69, Devils Peak Botanical Area is established to protect and conserve Yosemite onion, Congdon's wooly Eriophyllum and Congdon's lewisia. An establishment report will be prepared.

Analysis Area 59, the Kings Cavern Geological Area, contains several limestone caverns and was established to protect and maintain this geological feature. Analysis Area 72, the Courtright Intrusive Contact Zone Geological Area was established to preserve the scientific value of the bedrock exposure and provide interpretation of the features for the enjoyment of visitors. Within Analysis Area 71, the Dinkey Creek Roof Pendant Geological Area was established to preserve a metamorphosed remnant of sedimentary bedrock, which existed before granitic intrusion formed the modern Sierra Nevada Range. The management prescription for the Kings Cavern and Courtright Geological Areas is to continue management as geological areas in accord with implementation plans. The Dinkey Creek Geological Area will have an implementation plan prepared.

Analysis Area 70, Nelder Grove Historical Area is established to preserve giant Sequoias, early railroad logging activity, and prehistoric habitation sites by Native Americans. An establishment report will be prepared. Analysis Area 73, McKinley Grove Botanical Area is established to preserve giant Sequoias. An establishment report will be prepared.

Management prescriptions for this management area consist of the following general management prescriptions, forestwide management direction, and applicable management standards and guidelines. For specific fire management direction see Appendix E.

The following general management prescriptions and acres in each prescription apply to this management area [1] in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence.

Prescription	Acres	Resource Situation
1. Special Interest Areas	5,093	See Alternative A map. Analysis Areas 34, 59, 69, 70, 71, 72 and 73.
2. Minimum-level management	330	See SOHA and Furbearer Element map. Analysis Areas 59, 69, 70 and 73.
3. Limited-Timber Yield	200	See SOHA and Furbearer Element Map. Analysis Area 73.

On this page, a prescription was identified for each Analysis Area. The following list identifies the Standard and Guidelines used in that Analysis Area. If there are conflicting Standard and Guidelines, the most restrictive will have precedence.

Guidelines	Applicable Areas
5, 17, 22, 25, 51, 66, 85, 89	All S&Gs listed here apply to Analysis Areas 34, 59, 69, 70, 71, 72 and 73.
43, 53, 56, 58 - 64, 69 - 82, 97, 113 - 116, 120 - 131, 133, 139, 193 - 201, 208, 210, 217 - 220, 225 - 233	Analysis Areas 70 and 73
57	Analysis Area 70
204, 205	Analysis Area 70
318 - 320	Analysis Area 70
323	Analysis Area 75
325	Analysis Area 73

[1] Total acres of prescription exceed management area acres because part of the acres involve underground caves.

4.8.10

Management Area 10 (Research Natural Areas, 2,850 Acres)

Management Area 10 contains two existing and two recommended Research Natural Areas. It includes Analysis Areas 33 and 68 and Analysis Areas 7 and 67.

The existing Backbone Creek Research Natural Area for *Carpenteria californica* lies within Analysis Area 33. Within the San Joaquin Experimental Range is the existing blue oak-digger pine Research Natural Area (Analysis Area 68) Analysis Area 7 contains the recommended Bishop Creek Pacific Ponderosa Pine Research Natural Area and lies between South Fork Merced River and Yosemite National Park Within the Kaiser Wilderness is the recommended Home Camp Creek white fir/red fir Research Natural Area (Analysis Area 67).

The purpose and primary management emphasis of Research Natural Areas are to promote and protect natural diversity, to provide opportunities for study of plant succession and other biological and physical phenomenon over long periods of time, and for non-manipulative research observation and study in accord with their establishment report.

The management prescriptions for this management area consist of the following general management prescriptions, forestwide management direction, and applicable management standards and guidelines. For specific fire management direction, see Appendix E.

The following general management prescriptions and acres in each prescription apply to this management area in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence.

Prescription	Acres	Resource Situation
1 Research Natural Areas	2,850	See Alternative A map. Analysis Areas 7,33,67 and 68.
2. Wild and Scenic Rivers (Designated)	640	See Wild and Scenic Rivers Element map. Analysis Area 7.
3. Minimum - level management	290	See SOHA and Furbearer Element map Analysis Area 67.

On this page, a prescription was identified for each Analysis Area The following list identifies Standard and Guidelines used in that Analysis Area. If there are conflicting Standard and Guidelines, the most restrictive will have precedence

Standards & Guidelines	Applicable Areas
22, 25, 31, 32, 58, 68, 133, 139	All S&Gs listed here apply to Analysis Areas 7, 33, 67 and 68
56	Analysis Area 67
57	Analysis Area 67
377	Analysis Area 67



4.8 11

Management Area 11 (Dispersed Recreation-No Timber Harvest, 57,758 Acres)

This Management Area consists of Analysis Areas 3, 18, 48, 52 and 66. The areas are characterized for the most part as being nonroaded and undeveloped and are used primarily for primitive and semiprimitive dispersed recreation. They have limited suitability for timber, range and wildlife management activities. Analysis Area 18 contains some suitable developed recreational opportunities, if demand occurs.

The area generally exhibits one or both of the following conditions:

1. High elevation with a short growing season and low timber productivity or
2. Inaccessibility, which will result in high development costs.

South Fork of Merced River was designated as wild trout fishery by CDFG. Merced and South Fork Merced Rivers have also been designated as a Wild and Scenic Rivers

Primary management emphasis is dispersed recreation, stressing primitive and semiprimitive recreation with Visual Condition Type III or better. Other important considerations are wildlife (especially those species favoring late successional stage vegetation), grazing and watershed. Most OHV routes will remain open with reconstruction or relocation permitted, if necessary. Any proposed OHV routes will be considered on a case-by-case basis and covered by a project environmental assessment. Timber harvest may be considered only if a catastrophic event occurs within the area.

Management prescriptions for this management area consist of the following general management prescriptions, forestwide management direction, and applicable management standards and guidelines. Also shown is a list of activities and outputs [1] expected from applying the prescriptions. For specific fire management direction, see Appendix E.

The following general management prescriptions and acres in each prescription apply to this management area in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence.

Prescription	Acres	Resource Situation
1. Dispersed recreation	57,758	See Alternative A map. Analysis Areas 3, 18, 48, 52 and 66.
2. Wild and Scenic River (Designated)	6,080	See Wild and Scenic Rivers Element map. Analysis Area 3 and 18.
3. Minimum-level management	20,030	See SOHA and Furbearer Element map. Analysis Area 3 and 18.
4. Administrative Site	2	See Administrative Site Resource map located in Forest Facility Master Plan.

On this page, a prescription was identified for each Analysis Area. The following list identifies the Standard and Guidelines used in that Analysis Area. If there are conflicting Standard and Guidelines, the most restrictive will have precedence.

Standards & Guidelines	Applicable Areas
2, 4, 14 - 20, 22 - 24, 27, 31, 32, 34 - 36, 38, 40 - 42, 51 - 63, 68 - 82, 88, 91, 92, 97, 122 - 124, 128, 131 - 152, 159, 161, 162, 165, 193 - 205, 216, 218 - 220, 224 - 233, 303, 311	All S&Gs listed here apply to Analysis Areas 3, 18, 48, 52 and 66.
312, 313	Analysis Areas 3 and 48.

[1] Some outputs are measured only on a forestwide basis and therefore, are not listed here (See Forestwide summary 4. 03).

**TABLE 4.09 - MANAGEMENT AREA 11: ESTIMATED AVERAGE ANNUAL OUTPUTS AND ACTIVITIES DURING NEXT FIVE DECADES**

OUTPUT / ACTIVITY	UNIT	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
Trail Reconstruction	Miles	10	0.5	-	-	-
Habitat Improvement-Wildlife	Acres	800	800	800	800	800
Habitat Improvement-Fish	Acres / Structures	20	18	19	19	22
Range Administration	M Acres	0.9	0.9	0.9	0.9	0.9
Watershed Improvement	Acres	0.1	-	-	-	-
Treatment of Natural Fuels	Acres	25	25	25	25	30



4 8.12

Management Area 12

(Special Management Area, 48,668 Acres)

Management Area 12, Kings River Special Management Area, is comprised of Analysis Areas 63 and 64 (24,368 acres) in the Sierra National Forest, and 24,300 acres in the Sequoia National Forest. Major activities occurring near and within the area are rafting, hunting, hiking and fishing. Some 50 miles of trails provide access to and along portions of the river. Topography, vegetation and difficult access restrict recreational opportunities. Kings River above Pine Flat Reservoir supports excellent fisheries and has been designated a California Wild Trout Stream.

This area is characterized by steep slopes covered with dense brush interspersed with areas of rock outcrop and openings of annual grassland. Occasional stands of timber occur at higher elevations particularly on north facing slopes. The Kings River is an important water source for hydroelectric power generation at Pine Flat Dam and for recreation and downstream irrigation. It is on the National Rivers Inventory with some sections being studied for National Wild and Scenic River status, while other sections have already been designated.

The more noteworthy features, aside from the river, are Garlic Falls and several groves of giant Sequoia, including the Boole Tree.

Management emphasis will be recreation; protection of the area's natural, archaeological, and scenic resources; and management for fish and wildlife. Land is withdrawn from mineral entry, however, existing claims are permitted. Existing OHV routes will remain open. Timber harvest may be considered if a catastrophic event occurs within the area or for wildlife management.

Management prescriptions for this management area consist of the following general management prescriptions, forestwide management direction, and applicable management standards and guidelines. Also shown is a list of activities and outputs [1] expected from applying the prescriptions. An implementation plan will be completed for the area which will contain site specific management direction [2]. For specific fire management direction, see Appendix E.

The following general management prescriptions and acres in each prescription apply to this management area in order of priority. This priority may change due to individual project analysis. If there are conflicting prescriptions, the most restrictive will have precedence.

Prescription	Areas	Resource Situation
1. Special Management Area	48,668	See Alternative A map. Analysis Area 63 and 64.
2. Dispersed Recreation	48,668	See Recreation Opportunity Class Objectives and Wildlife Element maps. Analysis Areas 63 and 64.
3. Wild/Scenic Rivers (Designated)	2,720	See Wild and Scenic Rivers Element map. Analysis Area 63 and 64.
4. Minimum - level management	1,200	See SOHA and Furbearer Element map. Analysis Area 63.

On this page, a prescription was identified for each Analysis Area. The following list identifies the Standard and Guidelines used in that Analysis Area. If there are conflicting Standard and Guidelines, the most restrictive will have precedence.

Standards & Guidelines	Applicable Areas
2, 3, 4, 14 - 16, 31 - 36, 38, 40, 53 - 55, 58 - 60, 63, 66c - 77, 80 - 82, 85, 86, 89 - 90, 92, 123, 128, 137 - 141, 143, 145 - 148, 150, 162, 166, 170, 194 - 202, 205 - 206, 217, 219 - 221, 228 - 231, 334 - 338	All S&Gs listed here apply to Analysis Areas 63 and 64

[1] Some outputs are measured only on a forestwide basis and therefore, are not listed here (see Forestwide Summary Table 4.03).

[2] A site specific implementation plan will be completed in 1991 containing direction for both the Sierra and Sequoia National Forests.

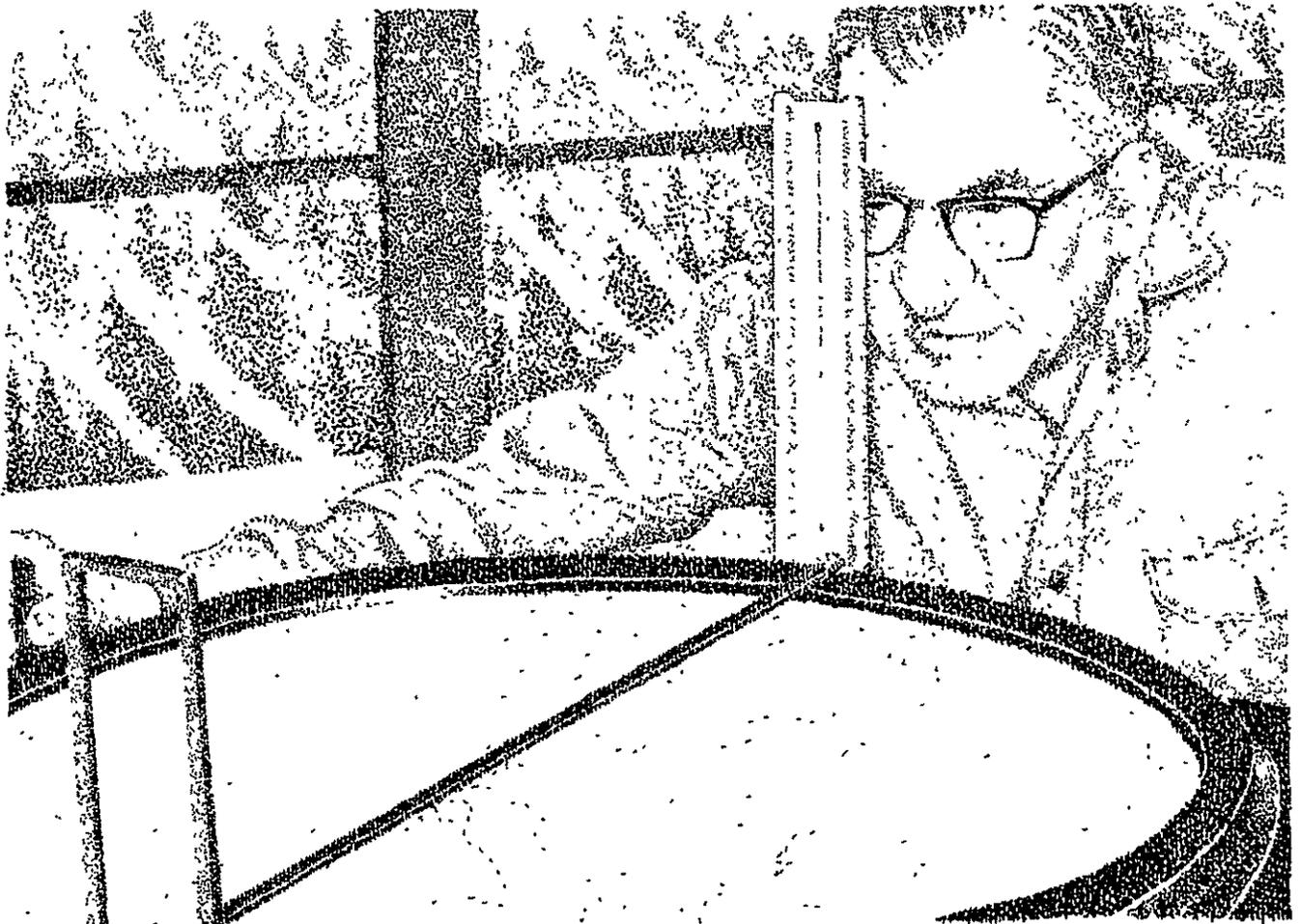
**TABLE 4.10 - MANAGEMENT AREA 12: ESTIMATED AVERAGE ANNUAL OUTPUTS AND ACTIVITIES DURING THE NEXT FIVE DECADES**

OUTPUT/ACTIVITY	UNIT	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
Trail Reconstruction	Miles	5	3	3	-	-
Trail Construction	Miles	0.5	-	-	-	-
Habitat Improvement - Wildlife	Acres	350	350	350	350	350
Range Administration	M Acres	10.0	10.0	10.0	10.0	10.0

NOTE: Miles of trail reconstruction and trail construction are estimated. Actual miles will be determined during development and implementation of the Management Plan, to be completed by 1991.



## Chapter 5.0 – Monitoring and Evaluation Requirements



**5.0  
MONITORING AND EVALUATION REQUIREMENTS**

**5.1  
ORIENTATION**

The purpose of monitoring and evaluating is to provide information on results and progress of the Forest Plan in order to make revisions or amendments in a timely manner. The Monitoring Plan in this chapter identifies activities, practices and effects to be measured as well as methods, frequencies and degree of variation which will require additional evaluation. It does not include the recurring monitoring associated with individual resource projects or activities, or the cost of this type of monitoring, nor does it include baseline data gathering, which is considered an activity in this Plan.

There are three levels of monitoring with a direct, sequential relationship between levels, each requiring additional costs. The first (Implementation) determines if plans, prescriptions, projects and activities are implemented as specified in project level environmental documents. The second (Effectiveness) determines if prescriptions and management activities meet management direction, objectives and standards and guidelines. The third (Validation) determines whether the initial data, assumptions and coefficients used in development of the Plan are correct.

This monitoring plan is designed to focus attention at the first level of monitoring, or implementation of Forest Plan. The next level will only be initiated when it is determined additional resource monitoring is needed.

The goals of monitoring are to determine:

- if planned goals and objectives are being met,
- if planned programs and activities are resolving issues and concerns,
- if the effects of implementing the Forest Plan are as predicted,
- if the costs of implementation are as predicted, and
- if direction and standards and guidelines are being followed and if their purpose is effective

**5.2  
MONITORING SYSTEM**

Results of monitoring and evaluation are reported on a fiscal year basis. The report summarizes the accomplishments of the previous fiscal year. The data sources for monitoring the Plan are as follows:

- Management Reviews

Management review includes General Management Review, Program Review and Activity Review.

- Other Ongoing Inventories and Monitoring Programs

These programs include, but are not limited to, soil productivity monitoring, water quality monitoring, forest inventory plots for timber, range utilization inventories, resident trout monitoring, and threatened and endangered species habitat monitoring.

- Management Attainment Reports

These reports are filed by District Rangers and various Forest Supervisor's staff. Targets are established at the beginning of the year and accomplishments are reported at the fifth, tenth and twelfth month of each year. The reports are forwarded to the Regional Forester.

- Environmental Analysis Process

For site-specific monitoring, the responsible officer is the District Ranger. Forestwide data compilations, quality control, training, and spot checking is the responsibility of the Supervisor's staff.

During the data acquisition phase of an analysis of the management situation, an assessment of project area data is completed. As necessary, data elements are updated to reflect current resource conditions.

**5.3  
PRECISION AND VALIDITY**

"Precision" is the exactness or accuracy of the measurement technique with which data are collected. "Validity" is the expected probability that information acquired through sampling reflects actual conditions, that is, the degree to which the monitoring procedures accurately reflect the Forest situation. Both precision and validity are qualitatively rated as either high, moderate or low. Components such as key targets - range forage utilization (in AUMs), miles of road construction, and timber offered (in MMBF), have a high level of accuracy and high probability of reflecting actual conditions. Other components, such as forage condition and trend, have a moderate or low level of precision and validity, based on monitoring techniques available. Standards for precision and validity accuracy levels are:

Level of Precision / Validity	Expected Accuracy
High (H)	Within 10%
Moderate (M)	Within 30%
Low (L)	Within 50%
N/A	Not determinable

## EVALUATION

Evaluation of the results of the site-specific monitoring program will be documented in the annual evaluation report. The significance of the results of the monitoring program will be analyzed and evaluated by the Forest Supervisor. Based on the evaluation, there may be a need for further action. These actions may include

- No action needed. Monitoring indicates goals, objectives and standards are achieved.
- Refer recommended action to the appropriate line officer for improvement of application of management prescriptions.
- Modify the management prescription as a Plan amendment.
- Modify the assignment of a prescription as a Plan amendment.
- Revise projected schedule of outputs.
- Initiate revision of the Plan.

Plan modification and/or revision will be made in accord with the NEPA process and NFMA regulations

The documented file of the Forest Supervisor's decision, based on monitoring and evaluation, is to be maintained for future use in amending or revising the Forest Plan. An annual evaluation report of these decisions will be prepared and sent to the Regional Forester.

The Monitoring Evaluation Process (Figure 5.01) illustrates the steps necessary for an effective monitoring and evaluation plan. Based on this process, a need for further action is recommended to the Regional Forester.

## 5 5

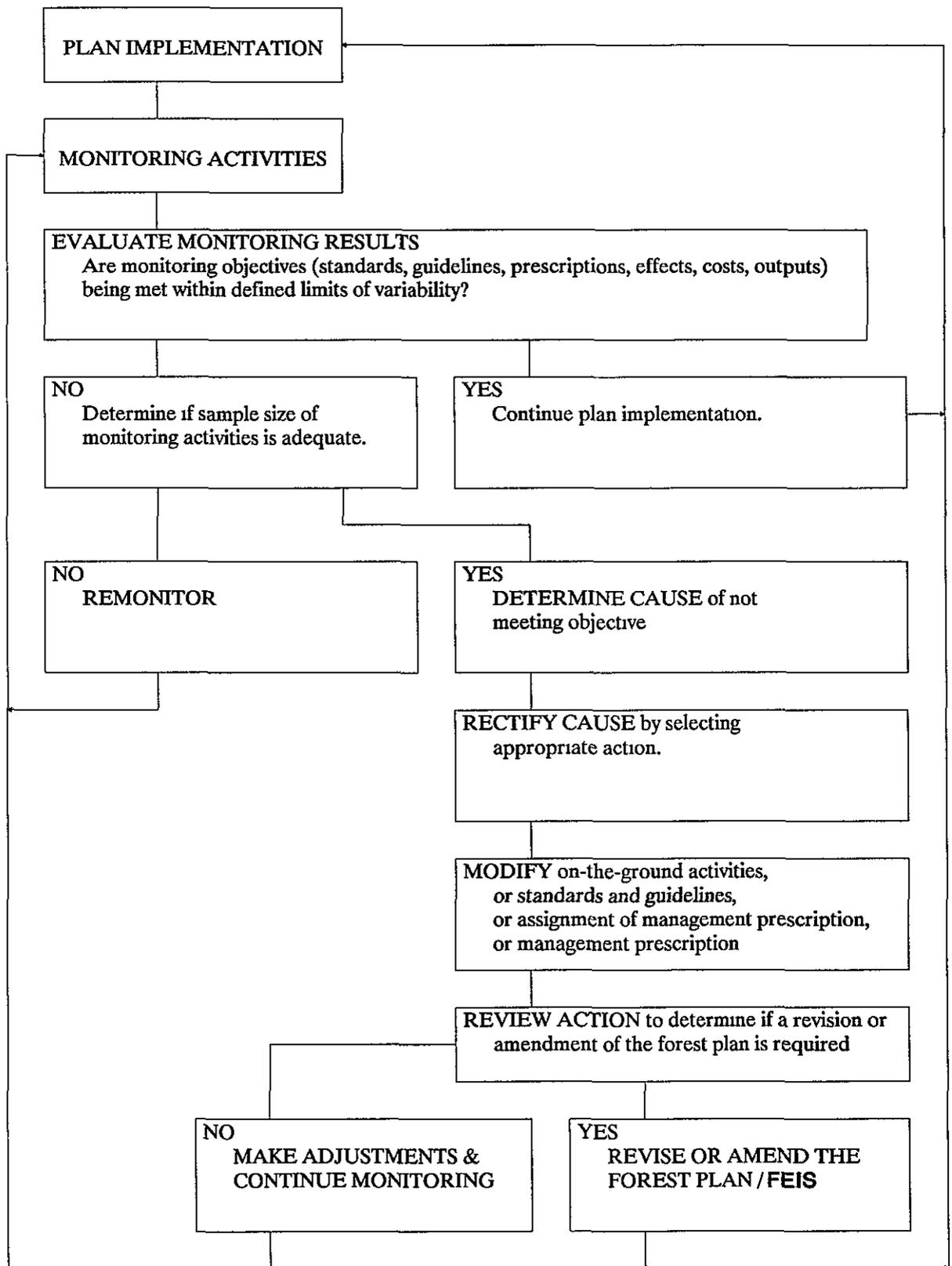
### MONITORING ELEMENT DISPLAY

The Forest Plan's monitoring requirements are contained in the following Monitoring Plan illustrated in Table 5.01. For each activity, practice, or effect to be monitored, one or more measurement techniques and the standard to be met are specified. A frequency for measuring and reporting the monitored items is established and the expected precision and validity of that measurement is stated.

To ensure R-5 Minimum Management Requirements, Plan's Standards and Guidelines and Best Management Practices are being implemented as designed in the project NEPA documents, the minimum monitoring frequency will be at least 10% of the annual projects or 5 projects per year.

In Table 5.01, 16 resources are listed, each having 11 headings continuing across 2 concurrent pages.

**FIGURE 5.01 MONITORING EVALUATION PROCESS**



RESOURCE	ACTIVITY PRACTICE	MONITORING OBJECTIVE	MONITORING TECHNIQUE	PRECISION / VALIDITY
Recreation	1. Actual costs of implementing Plan	Are predicted costs realistic?	Expenditure reports	High
	2. Off-highway vehicle (OHV) use	Are management objectives of OHV plan met and receiving public acceptance?	Review complaints and violations of OHV management to assure management and regulations are meeting expected objectives	N/A
	3. Recreation Opportunity Spectrum (ROS) Class	Are acres in each ROS Class changing from one end of the spectrum to the other enough to cause a significant change in recreational experience levels?	Compare previous ROS Class map to new map that shows changes made during the previous 5 years	N/A
	4. Recreational visitor use (RVDs)	Maintain records of RVD by type of activity, area, and ROS Class	Obtain RVDs by variety of sampling methods to assure a representative sample	Moderate
Visuals	1. Visual condition of the Forest	Are VQOs being met?	Field reviews and photographs from landscape control points	High
	2. Visual resource improvement	Is an active program of visual resource improvement being carried out?	Field reviews and photographs from landscape control points	Moderate
	3. Trend of visual character	Approach or maintain desired character state of Plan	Field reviews and photographs from landscape control points	High
	4. Visual Quality Objectives (VQOs)	Are predicted environmental consequences being reached?	Field observations at fixed and moving view points	Moderate
Cultural	1. Cultural resource protection	Are sites protected from project impacts?	On-site inspection; photographing and mapping during inventory	High
	2. Cultural resource protection	Maintain site integrity	On-site inspection; photographing and mapping during inventory	Moderate

MONITORING PERIOD	REPORTING PERIOD	STANDARD OF COMPARISON	RESPONSIBLE STAFF	INDICATION FOR ACTION	ANNUAL COST
1. Annually	Every 5 years	Predicted costs	Planning Officer and Budget Analyst	Average annual costs over first 5 years exceeds 10% of predicted costs	\$ 1,000
2. Annually	Annually	Average number of complaints or violations related to OHV use during first 2 years of the Plan	District Ranger	Greater than 20% increase in violations of zoning rules or complaint letters	\$ 4,500
3. 100% every 5 years	Every 5 years	Current acres of land by ROS Class as compared to previous acres of land by ROS Class	Recreation Officer	Loss of 10% of projected semiprimitive motorized or semiprimitive nonmotorized ROS Class areas	\$ 400
4. Annually	Annually	RVDs by activity, type, area, and ROS Class, as compared to previous years	District Ranger	5-year average more than 10% of projected use in any activity by ROS Class	\$ 10,000
1. Annually	Every 2 years	EVC and Forest Plan VQOs are defined in PSM 2380	Recreation Officer	5% failure to achieve planned VQO	\$ 2,000
2. Annually	Annually	Forest Plan Planning Records, Forest Plan VQOs & FSM 2380	Recreation Officer	Less than 50% of visual resource improvement projects accomplished in any year	\$ 500
3. Every 5 years	Every 5 years	Forest Plan and PSW-91 of 1973	Recreation Officer	Trend in direction away from goal	\$ 1,500
4. Designated Recreational area: annually, Sensitive travel corridors: every 2 years; Non-sensitive travel corridors: every 5 years	End of each decade	Preservation (Predominately ecological change) Retention (Changes not evident) Partial Retention (Changes evident, attention not attracted) Modification (Changes are noticed and attract attention) Maximum Modification (Changes are obvious and attract attention) Unacceptable Modification (Changes are glaring in contrast and disharmony with natural patterns)	Recreation Officer	Visual conditions in any corridor or designed recreational area falls by more than 10% to meet VQ)s stated in the Plan	
1. After projects	Annually or immediately in case of damage	FSM 2361, P.L. 96-95. P.L. 89-665	Resource Officer	No diviation allowed	\$ 3,000
2. Every 10 years	Annually (for 10% of sites)	FSM 2361, P.L. 96-95. P.L. 89-665	Resource Officer	Any significant loss of intergrity or any vandalism or damage	\$ 7,000

RESOURCE	ACTIVITY PRACTICE	MONITORING OBJECTIVE	MONITORING TECHNIQUE	PRECISION / VALIDITY
Fish and Wildlife	1. Lahontan and Paute Cutthroat Trout - habitat quality [1]	Detect declines in habitat quality	USDA Forest Service Region 5 Fish Habitat Assessment	Moderate
	2. Resident Trout - fish abundance and fish habitat [1]	Monitor trends in fish abundance and fish habitat	Habitat typing, residual pool volume measurements, and direct observation fish counts	Moderate
	3. Goshawk - habitat utilization [1]	Evaluate habitat utilization. Assess effectiveness of S&Gs	Nest site surveys of suitable habitat	High
	4. Peregrine falcon - habitat utilization [1]	Evaluate habitat utilization. Assess effectiveness of S&Gs	Nest site surveys	High
	5. Bald eagles / osprey - habitat utilization [1]	Evaluate habitat utilization. Assess effectiveness of S&Gs	Annual co-op survey with U. S. Fish and Wildlife Service	High
	6. Spotted owls - habitat utilization [1]	Evaluate habitat utilization. Assess effectiveness of S&Gs	Census by recording owl vocalizations	High
	7. Willow flycatcher - habitat utilization [1]	Evaluate habitat utilization. Assess effectiveness of S&Gs	Census by recording flycatcher vocalizations	High
	8. Mule deer - animal numbers [1]	Monitor population trends. Assess effectiveness of S&Gs	Annual deer herd summary reports from Department of Fish and Game	Moderate
	9. Bear - animal numbers	Monitor population trends. Assess effectiveness of S&Gs	Annual bear harvest summary reports from Dept. of Fish and Game	Moderate
	10. Riparian species - avian numbers [1]	Monitor population trends. Assess effectiveness of S&Gs	Field counts of avian species	High
	11. Oak woodland species - avian numbers [1]	Monitor population trends. Assess effectiveness of S&Gs	Field counts of avian species	High

[1] Management Indicator Species - Species or groups of species dependent upon specific habitat that will be monitored.

TABLE 5.01 - MONITORING AND EVALUATION (Continued)

MONITORING PERIOD	REPORTING PERIOD	STANDARD OF COMPARISON	RESPONSIBLE STAFF	INDICATION FOR ACTION	ANNUAL COST
1. Annually for 2 years then every 2 years	Every 2 years	Critical habitat components	Resource Officer	Detection of declines in critical habitat elements	\$ 7,000
2. Annually for 5 years then every 2 years	Every 2 years	5-year baseline information	Resource Officer	20% decline away from baseline information	\$20,000 first year then \$15,000 annually
3. Annually for 5 years then every 2 years	Annually for 5 years then every 2 years	Occupied habitat	Resource Officer	Abandonment of territories	\$ 5,000 annually
4. Annually for 5 years then every 3 years	Annually for 5 years then every 3 years	Base population	Resource Officer - tied to Tri-Forest Monitoring Plan	Failure of reintroductions or abandonment of nest sites	\$ 2,000
5. Annually	As requested by U S Fish and Wildlife Service	Base population	Resource Officer - tied to Tri-Forest Monitoring Plan	Notify and complete action suggested by U.S. Fish and Wildlife Service	\$ 500
6. Annually for 5 years then every 2 years	Annually for 5 years then every 2 years	Occupied management territories	Resource Officer - tied to Tri-Forest Monitoring Plan	Abandonment of territories during 2 successive samples	\$91,400
7. Annually for 4 years then every 2 years	Annually for 4 years then every 2 years	Occupied habitat	Resource Officer - tied to Tri-Forest Monitoring Plan	10% decline in occupied habitats for 2 successive samples	\$ 4,000 first year then \$3,000 annually
8. Annually	Annually	Base population	Resource Officer - tied to Tri-Forest Monitoring Plan	20% population decline for 2 successive years	\$ 200
9. Annually	Annually	Base population	Resource Officer - tied to Tri-Forest Monitoring Plan	20% decline from base population for 2 successive years	\$ 200
10. Annually for 5 years then every 2 years	Year 5, then every 2 years	Base population	Resource Officer - tied to Tri-Forest Monitoring Plan	20% decline from base population for 2 successive samples	\$17,000 first year then \$10,000 annually
11. Annually for 5 years then every 2 years	Year 5, then every 2 years	Base population	Resource Officer - tied to Tri-Forest Monitoring Plan	20% decline from base population for 2 successive samples	\$17,000 first year then \$10,000 annually

RESOURCE	ACTIVITY PRACTICE	MONITORING OBJECTIVE	MONITORING TECHNIQUE	PRECISION / VALIDITY
Fish and Wildlife	12. Meadow edge species - avian numbers [1]	Monitor population trends. Assess effectiveness of S&Gs	Field counts of avian species	High
	13. Mature mixed-conifer species-avian numbers [1]	Monitor population trends. Assess effectiveness of S&Gs	Field counts of avian species	High
	14. Selected furbearers - habitat utilization [1]	Evaluate habitat utilization. Assess effectiveness of S&Gs	Survey suitable habitat	High
	15. Residual density of snags and down logs after timber harvest - number per acre	Verify compliance with standards and guidelines	Field counts in ongoing and recently completed timber sales	Moderate
	16. Individual projects - variable	Are project objectives being met?	Field surveys of a representative range of projects	Moderate
	17. Proportions of habitat stages	Verify FORPLAN outputs for habitat diversity	Assessment of timber stand records and other field data	Moderate
Sensitive Plants	1 Sensitive plants	Assess current status and potential effects of management	Field surveys of past activities on selected populations of sensitive plants	Moderate
Range	1. Livestock production (AUM)	Determine livestock production if actual outputs meet planned outputs	Sum of actual-use records	High
	2. Condition and Trend of Range Forage Resource	Effect of long-term livestock use on the vegetative resource	Reanalysis of key areas and establish photo points. Species composition frequency, measure RDM in annual grass range	High/Moderate
Timber	1. Area of regeneration harvest sold by harvest method, Regulation Class & timber type	Is the Forest meeting the Plan's timber regeneration goal by management area?	Review of Annual Program Harvest Statements	High
	2. Timber volume sold by harvest method, Regulation Class & timber type	Is the Forest meeting the Plan's timber output goal?	Review of Annual Program Harvest statements	High
[1] Management Indicator Species - Species or groups of species dependent upon specific habitat that will be monitored				

TABLE 5.01 - MONITORING AND EVALUATION (Continued)

MONITORING PERIOD	REPORTING PERIOD	STANDARD OF COMPARISON	RESPONSIBLE STAFF	INDICATION FOR ACTION	ANNUAL COST
12. Annually for 5 years then every 2 years	Year 5, then every 2 years	Base population	Resource Officer - tied to Tri-Forest Monitoring Plan	20% decline from base population for 2 successive samples	\$17,000 first year then \$10,000 annually
13. Annually for 5 years then every 2 years	Year 5, then every 2 years	Base population	Resource Officer - tied to Tri-Forest Monitoring Plan	20% decline from base population for 2 successive samples	\$17,000 first year then \$10,000 annually
14. Inventory for 1 year annually for 5 years; then once every 3 years	R-5 Standards	R-5 Standards	Resource Officer - tied to Tri-Forest Monitoring Plan	R-5 Standards	\$ 5,000 year 1 \$ 3,000 year 2 After year 2, \$2,000 annual
15. Annually	Annually	Standards and guidelines	Resource Officer - tied to Tri-Forest Monitoring Plan	20% decline in required densities	\$ 4,000
16. Annually	Annually	Project objectives	Resource Officer	Variable	\$ 4,000
17. Every 10 years starting in year 5	Every 10 years starting in year 5	FORPLAN data base	Resource Officer	10% error between field data and FORPLAN data	\$ 5,000
1. Annually	Annually	Base population	Resource Officer	Noncompliance with prescribed mitigation measures	\$ 4,000
1. Annually	Annually	Planned output in AUMs	Resource Officer	More than 15% variation between planned output and actual output	\$ 500
2. Every 3 years	Every 5 years	R-5 standards and current monitoring techniques	Resource Officer	Change is significant when species composition is outside 95% confidence interval of species composition determined at critical sampling Photo comparison	\$20,000
1. Every 5 years	Annually	FSM 2497.11c	Timber Management Officer	When acres sold varies by more than 10% from the planned target for the monitoring period	\$ 5,000 [1]
2. Every 5 years	Annually	FSM 2497.32c	Timber Management Officer	When volume sold varies by more than 15% from the planned target for the monitoring period	\$ 5,000 [1]

[1] Includes all costs of preparing, editing, ADP, storing and printing individual sale reports

RESOURCE	ACTIVITY PRACTICE	MONITORING OBJECTIVE	MONITORING TECHNIQUE	PRECISION / VALIDITY
	3. Reforestation success	Is regeneration of harvested acres meeting Regional standards?	Annual review of stocking surveys taken on each harvested acre, Surveys are conducted 1st, 2nd, and 5th year following planting or seeding	High
	4. Land suitability for timber production	Verify land classified for timber production is capable and suitable	Field inspection of timber sales	High
	5. Timber stand improvements	Verify success or failure of timber stand improvement practices	Field inspection of units	High
Integrated Pest Management	1. Forest pest damage	Detection, evaluation, and treatment of pest-related damage	Aerial and ground surveys; stand and resource exams	Moderate
Soil	1. Soil productivity	Verify adequacy of Forest's prescriptions and standards and guidelines in maintaining and improving soil productivity (See FSH 2509 18)	Use areal extent sampling for a general condition assessment. Use point transect method for discrete variables for a general assessment of standard compliance. Use random grid method for continuous variables for a more precise estimate of standard compliance.	High
Water	1. Change in water quality	Assess compliance with BMP direction and continue to evaluate effectiveness of BMP.	Visual observation with random sample analysis	Moderate
	2. Water quality management during activities	Evaluate compliance with Plan policy and effectiveness of standards and guidelines	Review of prepared EAs, review of contract provisions, field activities, reviews, water quality analysis, and field observations	High
Air	1. Air quality maintenance in designated airsheds	Determine existing conditions from which trend can be projected to maintain air quality related values including visibility in Class I areas Evaluate compliance with State and Federal standards	Use Yosemite National Park automated background site as a surrogate for Sierra National Forest Class I areas	High
Geology	1. Effectiveness of the modified shelterwood prescriptions in maintaining slope stability on unstable land (reducing landslides)	Are management activities minimizing soil loss and water quality degradation resulting from mass movement on sensitive watershed lands?	Document monitoring locations and base conditions after harvest. Compare average number of landslides between areas with this prescription and similar uncut areas.	Moderate to high, increasing with time

MONITORING PERIOD	REPORTING PERIOD	STANDARD OF COMPARISON	RESPONSIBLE STAFF	INDICATION FOR ACTION	ANNUAL COST	
3	Annually	Annually	FSM 2472.03 and FSM 2497.52	Timber Management Officer	When "Annual Reforestation & Timber Stand Improvement Needs Report" indicates there are more than 9,000 acres in the current needs category requiring reforestation	\$40,000 [1]
4.	Annually	Annually	FSM 2410	Timber Management Officer	During project planning and reviews	\$ 5,000
5.	Annually	Annually	FSM 2410	Timber Management Officer	During annual timber stand examination	\$ 5,000
1.	Annually	Annually	Pest-related damage does not exceed levels that interfere with the attainment of management goals and objectives Staff	Forest Silviculturist, RO-FPM	When damage appears to interfere with or threaten the attainment of management goals or objectives	\$ 500
1.	10% of major projects annually for 5 years	Annually	Objectives are met	Resource Officer	Less than 90% of standards and guidelines are implemented  Whenever standards and guidelines are ineffective for the intended purpose  Whenever improvement and maintenance measures are not successful	\$ 9,500/year
1.	Annually	Annually	State and Federal objectives being met	Resource Officer	Suspended sediment exceeds State and Federal objectives	\$ 9,000
2.	Annually	Annually	BMP identified as project mitigation requirements; forestwide standards and guidelines; water quality objectives of beneficial users	Resource Officer	Implementing documents for 3 projects are missing needed water quality mitigation measures or water quality objectives violated or 2 field reviews identify mitigation measures are not being implemented	\$12,500 (for 5 years)
1.	Contin- uously for 2 years	Every 2 years	Federal and State air quality standards (background data needed first)	Forest Engineer	4 years of continuous decline in visibility	\$ 6,000
1.	Every 5 years	Every 5 years	No statistical difference between average number of landslides in cut and uncut areas	Resource Officer	Statistically significant difference between the average number of landslides in cut and uncut area	\$ 1,000
[1] Includes all costs for stocking surveys, preparing data, editing data, ADP, storing and printing individual stand reports						

RESOURCE	ACTIVITY PRACTICE	MONITORING OBJECTIVE	MONITORING TECHNIQUE	PRECISION / VALIDITY
Minerals	1. Mining operations	Assure surface resources are protected	Review all EAs and Plans of Operation; field review of implementation (one operation per district per year)	Moderate
Lands	1. Administrative effectiveness of landownership adjustments	To determine whether land adjustments have decreased administrative concerns and/or increased efficiency	Compare management efficiencies of resultant landownership pattern with the "before condition"	N A
	2. Landline location	Ascertain if priority projects are being given priority	Review work accomplishment	High
	3. R/W Acquisition	Evaluate progress of R/W acquisition	Project accomplished	High
	4. Land use	Determine if instruments authorizing land occupancy and use are consistent with Forest Plan	Review authorizing instruments	High
Transportation	1. Road construction, management and maintenance	Assess effectiveness of road impact prediction	Forest activity review of selected roads	Moderate
	2. After construction and maintenance of administrative sites	Assess effectiveness of Forest's needs assessment process	Forest activity review of facilities	Moderate
Protection	1. Resource loss to wildfire	Evaluate the consequences of the Plan	Fire and resource damage reports	High
	2. Area of fuel treatment	Are output objectives in Plan being met? Evaluate the consequences of the Plan	Annual accomplishment report	High

MONITORING PERIOD	REPORTING PERIOD	STANDARD OF COMPARISON	RESPONSIBLE STAFF	INDICATION FOR ACTION	ANNUAL COST
1. Annually	Annually	Forestwide direction	Lands Officer	Any variation from the authorized operation plan or insufficiently mitigated, significant effects	\$ 1,000
1. 5 year summary	5 years	FSM 5430 Forest Standards and Guidelines	Lands Officer	N.A	\$ 200
2. Annually	Annually	FSM 7150 Forest Standards and Guidelines	Lands Officer	N.A	\$ 400
3. Annual use 3 year average	Annually	Annual Work Plan Forest standards and guidelines	Lands Officer	33% variation in any one year 10% variation over 3 year average	\$ 200
4. Annually	Annually	FSM 2700 Forest standards and guidelines	Lands Officer	30% after 2 years 10% after 4 years none after 5 years	\$ 500
1. 3 years	3 years	Forest policy on erosion control, size of system and cost	Forest Engineer	20% variation from the Plan	\$ 500
2. 3 years	3 years	Administrative sites, energy goals and value/cost ratio in the Plan	Forest Engineer	10% variation from the Plan	\$ 1,000
1. Annually	5 years	1982 base areas projected burned and predicted cost and value loss	Fire Management Officer	Losses or costs exceeding 20% of the predicted annual, burned acres, and costs	\$ 1,000
2. Annually	5 years	Program - predicted fuels treatment	Fire Management Officer	Less than 15% of predicted outputs	\$ 1,000

# CHAPTER 6.0 – APPENDICES



## 6.0 APPENDICES

### A.0 APPENDIX A - RESOURCE IMPLEMENTATION PLANS AND TECHNICAL PLANNING NEEDS

The data and information collection phase of the Forest planning process was designed to meet the intent of NFMA and to help address local issues, concerns, and opportunities. This phase was very lengthy and time-consuming. Although a very detailed data base was developed from a wide array of inventory information, several areas will need to be addressed more thoroughly during the next cycle of land and resource management planning for the Forest. As a result of this Plan, several resource implementation plans will need to be developed or revised and some additional studies conducted. Resource implementation plans and resource inventories will be used to augment and/or monitor and update the Plan. Existing resource implementation plans (prior to their revision) will be used to augment the Plan where there is no conflict. Where there is conflict, the direction in the Plan will prevail.

The following list of plans and studies need to be revised or completed within the planning period:

1. Merced Wild Scenic River Plan.
2. Kings Wild Scenic River Plan
3. John Muir Wilderness Plan.
4. Ansel Adams Wilderness Plan.
5. Kaiser Wilderness Plan.
6. Dinkey Lakes Wilderness Plan.
7. Monarch Wilderness Plan
8. Kings River Special Management Area Plan
9. Off Highway Vehicle Travel Plan.
10. Bass Lake Recreation Area Composite Plan
11. Huntington Lake Recreation Area Composite Plan.
12. Grazing Allotment Plans.
13. San Joaquin Deer Herd Plan.
14. Huntington Lake Deer Herd Plan.
15. Spotted Owl Habitat Area Plans.
16. Upper Kings River Fishery Habitat Management Plan.

17. South Fork Merced River Fishery Habitat Management Plan.
18. Lahontan Cutthroat Trout Recovery Plan.
19. Land Adjustment Plan.
20. Viewshed Corridor Plans for major forest highways.
21. Woodlands Management Plan for all woodlands not presently managed for sawtimber.
22. South Fork Merced River and Home Camp Creek RNA Management Plans
23. Fire Management Action Plan.

The following is a list of data-gathering needs and inventory or survey requirements:

1. All Forest withdrawals will be reviewed, as required by the Federal Land Policy and Management Act of 1976 (Public Law 94-579, Section 204) by October 21, 1991.
2. *Detailed cumulative watershed effects, as necessary, when approved methodology becomes available.*
3. Order II Soil Surveys in conjunction with compartment planning and individual projects to ensure continued soil productivity.
4. Groundwater situation and demands for the next planning cycle.
5. Establishment reports by 1992 for the candidate RNAs.
6. Nelder and McKinley Groves studies for possible classification as SIAs
7. Effects of mountain lions on Forest deer herds
8. Plots and 5-year baseline data to begin monitoring avian guilds, as specified in the Monitoring Plan.
9. Cultural resource inventories and evaluations, with a goal of a complete Forest inventory by the next planning cycle.
10. Necessary data and complete assessment by 1988 for a Woodlands Management Plan for all woodlands not presently managed for sawtimber.
11. The President's August 2, 1979 Environmental Program directed the Forest Service and Bureau of Land Management to study possible boundary adjustments between the two agencies. A National study is underway to determine what adjustments should take place. Action will require an act of Congress following full public involvement.



## B.0

### APPENDIX B - RESEARCH NEEDS

It is anticipated that additional research needs will surface during Plan monitoring and evaluation. Some research has already been initiated and will continue to be coordinated by the Pacific Southwest Experiment Station and the Regional Office. The following needs have been identified during the Forest Planning process:

1. Conduct research to determine optimum stream canopy shading requirements for Forest streams
2. Conduct research to determine relationships between stream flow regimes, distribution and abundance of riparian vegetation, and large woody debris in stream channels.
3. Develop methods to quantitatively assess sedimentation impacts on fish developmental stages.
4. Coordinate with California Department of Fish and Game in research to determine trophic relationships between trout and nongame species in upper Kings River.
5. Continue research to determine biotic responses to cumulative watershed effects
6. Develop methodology to determine the amount of bank disturbance from intensive grazing that can be tolerated before water quality and fishery values are seriously affected.
7. Continue studies to determine if significant social conflict exists between deer and cattle.
8. Continue investigations of habitat needs for individual species of birds, mammals, amphibians, and reptiles under the framework of the Wildlife Habitat Relationship Program.
9. Continue research in the relationships between deer population trends and predation by mountain lions and coyotes.
10. Research the relationships between down log densities and population trends in dependent species.
11. Research fire frequencies and intensities on north-facing chaparral slopes and assess this relationship with plant and animal community structure.
12. Determine the ability of sensitive plants, such as Trifolium bolanderi, to withstand the effect of grazing.
13. Continue research to identify the type, timing, and extent of vegetative control necessary to assure reforestation success on a variety of timber units.
14. Continue research to improve seedling survival and growth of planted red and white fir.
15. Continue research into computer methodology and programming that will simultaneously and cost-effectively produce both timber harvest levels and spatial location of harvest areas.
16. Continue research to improve growth and yield predictions in second growth timber stands being managed under various intensity levels.
17. Continue research into the characteristics and dynamics of Heterobasidiom annosum root disease in second growth timber stands.
18. Continue research to determine the effect that periodic biomass removal, including physical activities and fire activity, has on soil productivity.
19. Determine the relationship between losses in soil productivity and conventional logging practices and sensitive soils.
20. Continue research to determine the value and role fertilization has in increasing growth of regenerated timber stands and forage production, utilizing methods which are cost-effective
21. Conduct studies and develop a process to establish the threshold of concern that controls increase of cumulative impacts from management activities on watersheds.
22. Conduct research in the central Sierra Nevada Range to show the relationship of silvicultural practices and other vegetative modification projects to water increases.
23. Develop a cost-effective methodology to determine rates of natural erosion and sedimentation, and rates resulting from land-disturbing activities.
24. Develop methodology to determine, on a regional basis, significance of cultural resource sites.
25. Conduct research identified in the Forest Cultural Research Overview that can be completed within the life of this Plan:
  - a. Investigate historic period events and patterns which altered aboriginal population, settlement and resource use.
  - b. Build an ethnographic data base comparable to that for archaeological resources.

- c Investigate entry of Western Mono to the west of the Sierra Nevada Range.
- d Identify what characteristics non-ambiguously describe archaeological properties associated with specific cultural groups and time periods

**C.0  
APPENDIX C - TIMBER MANAGEMENT TABLES**

**C 1  
INTRODUCTION**

This appendix presents a discussion of the determination of suitability and six tables and two figures, which are required by Forest Service directive, to complete the Forest Plan. These tables provide useful information concerning the dominant activity of the Forest and the one that has the greatest potential for influencing other Forest resources.

Figure C1, **PROCESS FOR IDENTIFICATION OF LAND SUITABLE FOR TIMBER PRODUCTION**, identifies the criteria and explains the step-by-step process for the determination of land suitable for timber production

Table C.01, **LAND PRODUCTION CLASSIFICATION**, classifies land areas within the Forest into several categories, suitable and unsuitable land, for timber production and management

Table C.02, **SILVICULTURAL MANAGEMENT PRACTICES FOR SUITABLE LAND**, shows how the suitable timber land will be managed to meet harvesting objectives.

Table C.03, **TIMBER PRODUCTIVITY CLASSIFICATION**, displays the distribution of suitable and unsuitable land on the basis of potential growth or production.

Table C 04, **ALLOWABLE SALE QUANTITY AND TIMBER SALE PROGRAM QUANTITY**, presents the volume of timber sold in terms of the harvesting methods used. These figures are estimates of average annual production during the first decade, 1991-2000.

Table C 05, **SUMMARY OF PRESENT AND FUTURE FOREST STOCK CONDITION**, tabulates the current and anticipated status of the age and volume of all forest stock in Sierra National Forest.

Figure C2, **LONG-TERM SUSTAINED YIELD AND ALLOWABLE SALE QUANTITY**, displays and compares the difference between the amount of timber that could be harvested under a long-term sustained yield management program and the amount of timber that will be sold and harvested under current management policies.

Table C.06, **TEN-YEAR COMPARTMENT HARVEST SCHEDULE**, summarizes the basic information and scheduling of timber sales over the next ten years. This information includes the expected volume of timber and the compartment name and management area.

**C.2  
DETERMINATION OF LAND SUITABILITY**

**Identification of Land Tentatively Capable, Available, and Suitable for Timber Management**

Section 6 (g) (2) (A) of the Resource Planning Act of 1974, as amended by the National Forest Management Act of 1976, is quoted as follows:

"Require the identification of suitability of land for resource management "

Section 6 (g) (3) (A) states that guidelines for land management plans developed to achieve the goals of the program (RPA), which insures consideration of the economic and environmental aspects of various systems of renewable resource management, including the related systems of silviculture and protection of forest resources, will provide for outdoor recreation including wilderness, range, timber, watershed, wildlife, and fish. The land suitability assessments required under the RPA/NFMA planning process state there shall be a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences

The Act provides very little direction as to what form this "Systematic interdisciplinary approach" plan shall take. The Secretary is directed under Section 6 (g) to issue regulations which set forth the process for developing land management plans, which provide guidelines and standards for analyzing suitability of various forms of resource management.

Under Section 219.3, Definitions of National Forest Management Act Regulations (9/17/79), the definition of suitability is provided. Also, the amended version of 36 CFR 219 (11/1/82) has the same definition of suitability which is:

"The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices."

Furthermore, under 36 CFR 219.3 of the National Forest Management Act Regulations (9/17/79) and the amended Regulations (effective 11/1/82) referenced above, state capability as follows:

"Capability" the potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices at a given level of management intensity. Capability depends upon current conditions and site conditions, such as climate, slope, landform, soils, and geology as well as the application of management

practices, such as silvicultural or protection from fire, insects, and disease "

## Procedure

Figure C1 illustrates the process for identifying land suitable for timber production. The following text describes the process.

Step 1. Forested land - land where trees cover at least 10 percent of the area

Step 2. Land withdrawn - land where formal, legal or administrative direction prohibits timber management (e.g , Wilderness).

Step 3. Industrial wood - lumber from those species currently utilized for commercial purposes.

Step 4. Irreversible damage - damage consideration of soil, watershed, wildlife, and any other resource affected by timber management.

Step 5. Restocking within five years - regeneration of commercial timber species

Step 6. Tentatively suitable land - all land that passes through Steps 1 to 5.

Step 7. Land selected - portion of tentatively suitable land base selected for timber production and not constrained by economics or other resource needs in FORPLAN model

Step 8 Suitable land - difference between tentatively suitable (6) and land excluded from regulated timber production by FORPLAN (7).

Step 1 was the mapping of Forest land. Differences in vegetation were identified and delineated on aerial photos covering nearly the entire Forest. Land with at least 10% crown closure in conifer timber or clearly visible evidence of having been forested were further delineated by forest type and condition. The resulting maps were digitized for data processing by Wildland Resource Information System (WRIS). WRIS produces a listing for each mapped timber stand and summaries by forest type and condition.

The 562,900 acres of mapped timber stands were carried forward to Step 2.

Step 2 is land withdrawn from timber production Designated Wilderness areas and Kings River Special Management Area have been legislatively withdrawn from timber production. Areas withdrawn were determined by summarizing acres of mapped timber stands within each Wilderness area plus the previously published estimates of forest covered land on unmapped older Wilderness areas. Also, the Teakettle Experimental Forest has been administratively

withdrawn. Published estimates of forest covered land were used for this land.

Thus, 420,500 acres were carried forward to Step 3.

Steps 3 and 5, began in November - December 1979, using available soil information, a data base printout of every timber-type polygon on the Forest, and a random number list. The team selected 42 Condition Class 2 stands totaling 1,072 acres Each stand was then located on an aerial photo For any stands where suitability was questionable, a 1 inch = 111 feet photo enlargement of the stand was obtained.

A team consisting of Dave Smith, District Silviculturist from Minarets; Robert Zwirtz, Silviculturist from Kings River; Ken Denton, Forest Silviculturist; and Bruce Moyle, Forest Timber Staff Officer, (the first three people listed are certified silviculturists) reviewed the photos and for each stand determined if they were

"High Site": Average looking Forest land where poor stocking was attributable to non-site related factors such as recent timber harvesting.

"Low Site": Forest land where poor stocking was a natural, site-related condition, but condition and amount of stocking indicated it could grow more than 20 cubic feet per acre per year, and soil conditions appeared to be good enough for successful reforestation (although regeneration costs of about twice the normal forest average were permitted).

"Non-Commercial". Land that appeared to meet either of the following conditions: 1) It would not grow at least 20 cubic feet per acre per year MAI at culmination, even at maximum stocking, or 2) It could not be regenerated with a reasonable cost or chance of success. For reasonable cost; two times the Forest average cost for regeneration was used.

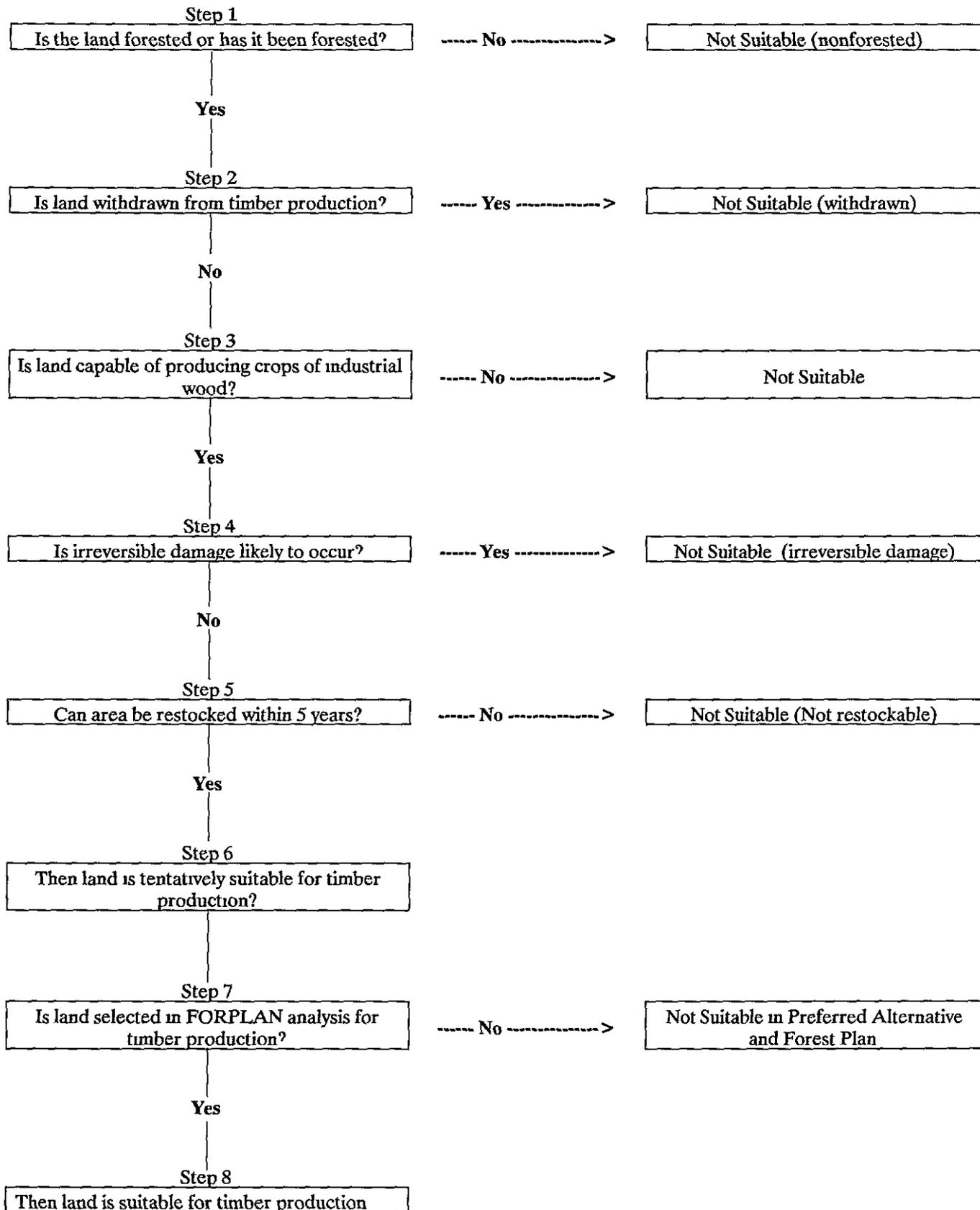
Factors, such as access, economics (other than the above test of reasonableness) logging systems, and distance from other stands were not included in this step The 1" = 111' aerial photos worked very well for determining rockiness of the site, vigor of tree crowns, skid trails and stumps, and other site-indicating features. Also, individual team members had previously visited a few of the sites.

The team determined 15.4% of the acreage in our sample was non-commercial, and thus 15.4% of the entire Forest acreage in Condition Class 2. Some stands met both non-commercial criteria above, so a 50/50 split between Step 3 and Step 5 is as close as the team could approximate with the sample.

The small size of the sample could be a concern, however, two previous steps had already pointed to a non-commercial percentage in the 15% range These steps were:

1. We originally randomly selected 200 sample stands and took them through this entire process, and the non-commercial percentage was determined to be 26%. A subsequent review of the process revealed a serious bias in the way stands were selected. This bias was weighted totally toward the non-commercial stands. At the time this bias was estimated to account for 5-15% of the 26%. Correcting the bias resulted in only 42 of the original 200 samples being left in the data
  2. Prior to sampling, a telephone poll was conducted with 4 of the 5 Ranger Districts. Personnel were asked "What percentage of your poorly stocked strata is non-commercial?" Results of the poll may be found in the Forest's planning records.
- Step 4 considers all current technology, regardless of cost, available to manage timber without appreciable productivity loss in timber, soil, watershed, or other resources as determined by an interdisciplinary team. Eighty-two hundred acres were removed at this step, primarily because of unstable soils.
- Step 6 is the final test of suitability. Here land not suitable for timber production are identified in FORPLAN and restricted by:
1. Other resource constraints make it inappropriate in the alternative.
  2. The economics of timber production as constrained by even-flow non-declining yield

**FIGURE C1 - PROCESS FOR IDENTIFICATION OF LAND SUITABLE FOR TIMBER PRODUCTION**



**TABLE C.01 - LAND PRODUCTION CLASSIFICATION**

CLASSIFICATION	ACRES
1. Nonforest land (includes water)	712,300
2. Forest land	562,900
3. Forest land withdrawn from timber production	142,400
4. Forest land not capable of producing crops of industrial wood (otherwise available land)	9,300
5. Forest land physically unsuitable:	
a) Irreversible damage likely to occur	8,200
b) Not stockable within 5 years	9,300
6. Forest land - inadequate information	0
7. Tentatively suitable Forest land (Item 2 Minus Items 3, 4, 5, and 6)	393,700
8. Forest land not appropriated for timber production:	
a) Assigned to California spotted owl habitat preservation	35,000
b) Assigned to other resource uses in Forest Plan	29,800
9. Unsuitable Forest land (Sum of Items 3, 4, 5a, 5b, 8a, and 8b)	234,000
10. Total suitable Forest land (Item 2 minus item 9)	328,900
11. Total National Forest land (Sum of Items 1 and 2)	1,275,200

**TABLE C.02 - SILVICULTURAL MANAGEMENT PRACTICES FOR SUITABLE LAND (Average annual activity during first decade)**

PRACTICE	ACRES
Regeneration Harvest:	
Clearcut	1,550
Shelterwood and Seed Tree	
- Preparatory Cut	0
- Seed Cut	1,170
- Removal Cut	0
Selection	
-Group	250
-Individual Tree	2,720 [1]
Intermediate Harvest:	
Commercial Thinning / Salvage / Sanitation	2,000
Timber Stand Improvement	2,000 [2]
Reforestation [3]	2,970
[1] Not included in reforestation acres	
[2] Does not include release for survival	
[3] Includes natural and artificial reforestation	

**TABLE C.03 - TIMBER PRODUCTIVITY CLASSIFICATION**

POTENTIAL GROWTH [1] (cubic feet / acre / year)	SUITABLE LAND (acres)	UNSUITABLE LAND (acres)
< 20	0	19,000
20 - 49	45,000	30,000
50 - 84	50,500	27,500
85 - 119	125,000	81,000
120 - 164	102,000	67,000
165 - 224	6,500	3,500
225 +	0	0
[1] All trees 2.0 inches d.b h. and larger.		

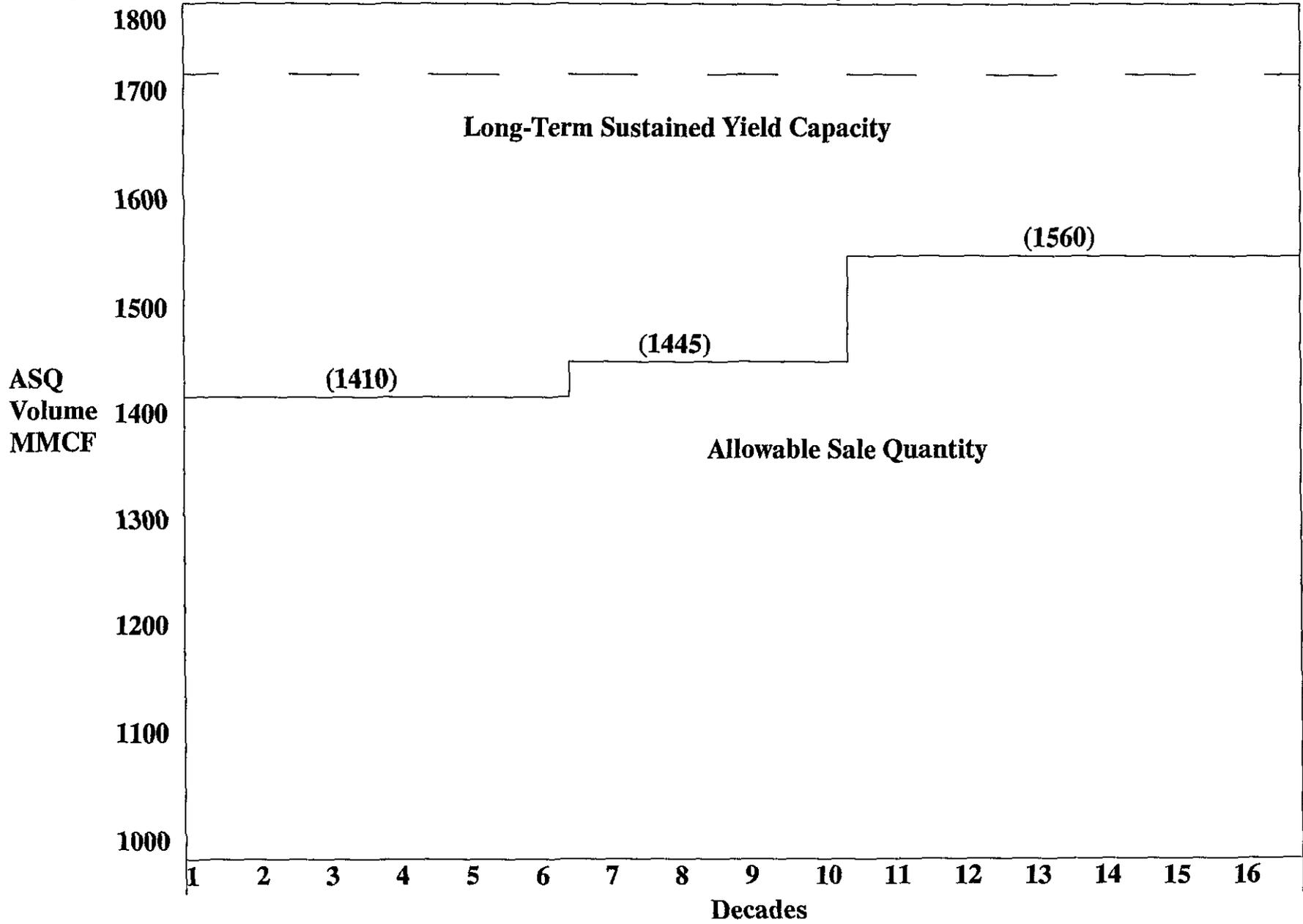
**TABLE C.04 - ALLOWABLE SALE QUANTITY AND TIMBER SALE PROGRAM QUANTITY (Annual average quantity for first decade)**

HARVEST METHOD	ALLOWABLE SALE QUANTITY	
	SAWTIMBER (MM CF)	OTHER PRODUCTS (MM CF)
Regeneration Harvest:		
Clearcut	4.1	0
Shelterwood and Seed Tree:		
- Preparatory Cut	Nominal	0
- Seed Cut	5.2	0
- Removal Cut	0	0
Selection		
- Group	1.9	0
- Individual	1.3	
Intermediate Harvest:		
Thinning / Salvage / Sanitation	1.6 [1]	0
Totals	14.1	0
AVERAGE ANNUAL	ADDITIONAL SALES	
	SAWTIMBER (MM CF/BF)	OTHER PRODUCTS (MM CF)
Total for all Harvest Methods	0	2.2 [2]
Allowable Sale Quantity	14.1 (88.0)	0
Timber Sale Program Quantity	14.1 (88.0)	0
[1] Combination of commercial thinning and salvage / sanitation		
[2] Firewood and cull logs		

**TABLE C.05 - SUMMARY OF PRESENT AND FUTURE FOREST STOCK CONDITION**

	UNIT OF MEASURE	SUITABLE LAND		UNSUITABLE LAND
		CONIFER	HARDWOOD	CONIFER ONLY
<b>PRESENT FOREST:</b>				
Growing Stock	MMCF	1,017.0	47.8	1,160.0
	MMBF	6,365.6	47.8	1,160.0
Live Cull	MMCF	1.2	78.9	1.8
	MMBF	5.8	381.6	9.3
Salvable Dead		Not Available		Not Available
Annual Net Growth [1]	MMCF	12.7	-	13.8
	MMBF	79.5	-	86.2
Annual Mortality [1]	MMCF	6.3	-	17.6
	MMBF	37.3	-	103.7
<b>FUTURE FOREST: [2]</b>				
Growing Stock [1]	MMCF	1,494.0		
Annual Net Growth [1]	MMCF	19.6		
<b>ROTATION AGE: [3]</b>				
Mixed Conifer Type	70 - 80 Years			
Ponderosa Pine Type	60 - 70 Years			
Red Fir Type	110 - 120 Years			
Low Site	70 - 80 Years			
	<b>Age Class</b>	<b>Present Forest</b>	<b>Future Forest</b>	
Age Class Distribution [4]	0 - 20	20,000	25,400	
	21 - 40	19,000	46,900	
	41 - 60	0	47,900	
	61 - 80	0	45,700	
	81 - 100	2,200	36,300	
	101 - 120	30,100	33,000	
	121 - 140	62,200	30,300	
	141 - 160	0	8,600	
	161 - 180	38,400	19,800	
	181 - 200	208,400	0	
	200 +	13,400	99,800	
[1] In trees over 110 inches d.b.h.				
[2] Future forest conditions are those predicted to exist prior to the 17th decade				
[3] Weighted average age of regenerated timber being clearcut in the 16th decade.				
[4] The acres of age classes for the present and future forests is for the tentatively available and suitable.				

Figure C2 - Long-Term Sustained Yield and Allowable Sale Quantity



District	Compartment Number	Compartment Name	Management Areas	Year										
				1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	TOTAL
51	700	Iorn	11	No scheduled timber harvest this planned period										
	702	Grizzly	4	5			6							
	702	Biledo	4		5			10						
	706	Big Creek	4							X				
	708	Summer	1									X		
	710	Silver	4				3						X	
	712	Westfall	4			7						X		
	714	Speckerman	4								X			
	716	Sandy	4								X			
	718	Kelty	4									X		
	720	Texas	4										X	
	722	Soquel	4			8						X		
	724	Nelder	4	No scheduled timber harvest (SOHA)										
	726	Lewis	4			3						X		
	728	Miami	4										X	
	730	Carter	4 & 5										X	
	732	Forks	4				3					X		
	734	Sivels	4										X	
	736	Chilkoot	4							X				
	738	Vista	4		6									
	740	Chepo	5										X	
	742	Pines	1									X		
	744	Spillway	1				1							
	746	Goat	1				4							
	748	Teaford	4				2							
	750	China Creek	4	No scheduled timber harvest (SOHA)										
	752	Merced	11	No scheduled timber harvest this planned period										
	754	Sweetwater	4								X			
	756	Midpines	5											
	758	Jerseydale	4								X			
760	Kirby Peak	5										X		
762	Barite	4	No scheduled timber harvest (SOHA)											
764	Iron Creek	4									X			



District	Compartment Number	Compartment Name	Management Areas	Year											
				1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	TOTAL	
53	308	Edison	1	No scheduled timber harvest this planned period.											
	309	Mill	1 & 4		3				6						
	310	Hoffman	4								X				
	311	Crater	4		6								X		
	312	Corral	4			7									
	313	Rattlesnake	4	No scheduled timber harvest (SOHA)											
	314	Florence	1	No scheduled timber harvest this planned period.											
	315	Daulton	1 & 4			6						X			
	316	Kaiser	4	7									X		
	317	Pryor	4		1					X					
	318	Westfall	4		2						X				
	319	L.Horsethief	4						X						
	320	U.Horsethief	4				X								
	321			No compartment delineated.											
	322			No compartment delineated											
	323	Chawankee	5 & 4							X					
	324	Mushroom	4								X				
	325	Huntington	1								X				
	326	Badger	1 & 4										X		
	327			No compartment delineated.											
	328			No compartment delineated.											
	329	Powerhouse	5												
	330	Pitman	4						4						
	331	Red	4	No scheduled timber harvest (furbearers)											
	332			No compartment delineated.											
	333	Musick	4				7						X		
	334	Tamarack	4							6	X		X	X	
	335	Sugar loaf	5												
	336	Jose	4	1					5						
	337	Shaver	1 & 4								X				
	338	Bald	4				4	5							
	Misc	Salvage		4	5	3	2	1							
	Annual Volume Target, MMBF				12	17	16	15	15	15	16.5	15	16.5	18	156



District	Compartment Number	Compartment Name	Management Areas	Year										TOTAL
				1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	
54	401	Peterson	4 & 5											
	402	Rush	4									X		
	403	Blue	4									X		
	404	Soaproot	5											X
	405	Duff	4								X			
	406	Summit	4							X				
	407	Rock	4						5					
	408	Cow	4											X
	409	Willow	4						8					
	410	Reese	4		6									
	411	Lost	4											
	412	Nutmeg	4								X			
	413	Oakflat	4									X		
	414	Ross	4		6									
	415	Bearwallow	4									X		
	416	Turtle	4											
	417	Muley	4											
	418	Cabin	4							X				
	419	Nelson	4								X			
	420	Snow Corral	4			13							X	
	421	Deer	4		9									
	422	Bull	4						6		X			
	423	Patterson	4		8									
	424	Hall	4			5								
	425	Shorthair	4				8							
	426	Hoffman	4				5							
	427	Sugar	4				4							
	428	3 - Springs	4											X
	429	Rogers	4					2						
	430	Smith	4										X	
	431	Statham	4											X
	432	Williams Cr.	4		10									
	433	Eagle	4											



District	Compartment Number	Compartment Name	Management Areas	Year										TOTAL		
				1991	1992	1993	1994	1995	1996	1997	1998	1999	2000			
55	501	Strawberry	2 & 4							X						
	501	Cattle	4		3						X		X			
	503	Jackass L.	4													
	504	Norris	4		7	3										
	505	McCreary	4				9									
	506	Portuguese	4							X						X
	507	Graveyard	4		4			8		X						X
	508	Fuller Butte	4					5					X			
	509	Buchenau	4	3				3								X
	510	Kates	4								X					X
	511	Arnold	4									X	X			
	512	Summit	4	4												
	513	Mammoth P.	1 & 5									X				
	514	Soda Springs	4									X				
	515	Camino	4				8									
	516	Shuteye R.	2							X						
	517	Shake Flat	4			3		5		X						
	518	Central C.	4			6					X					
	519	Sand Creek	4	2		2					X					
	520	Rock Creek	4			9										4
	521	Whiskey Falls	4						6			X				
	522	Roush	4	2				6				X				
	523	Fish Creek	4					1								
	524	Ross Creek	4					3								
	525	Morman	4							X		X				
	526	South Fork	5													
	527	Corrine	5													
	Misc.	Salvage		10	7	3	1	2								
Annual Volume Target, MMBF				21	21	26	28	29	37	40	37	40	37	316		
Forest Grand Total Target, MMBF				94	92	86	83	84	83	86.5	84	93.5	94	880		



D.0

APPENDIX D - TIMBER INVENTORY ADJUSTMENT

D.1

Overview

The Forest Plan is based upon a timber inventory that was completed in 1974. The inventory has been adjusted for timber harvest and growth through 1985. Timber stands were delineated on 1970 aerial photos having a scale of 1:15,840. Delineated timber stands were classified following Region 5 timber stand classification standards. Delineated timber stands were plotted by Township. Location, size and configuration of each delineated timber stand was retained in the Wildland Resource Inventory System (WRIS) by township WRIS provides for listing, summarizing and plotting selected stand characteristics and appropriate land classification, for example, wilderness, private and all other National Forest.

The total Forest timber volume, growth (cubic feet and board feet) and other data for mapped land was determined using a sampling procedure developed by Langely (1968, 1970).

For analysis and Forest Plan development, the inventory data was then stratified by forest type and stand class. Timber stands with similar volume, growth and management opportunities were grouped into 18 Condition Classes. The acres of each condition class were summarized for 120 separate analysis areas. A conversion factor from cubic to board feet was calculated for each condition class to determine board feet in trees over 11 0 inches diameter at breast height (d b.h.). Growth and yields for each condition class were determined using the Regional growth and yield model commonly referred to as RAM PREP. Thus, the total Forest timber volume and growth in trees over 11 0 inches d.b h. can be determined by multiplying the stratified

inventory volume and growth per acre figures by the acres in each respective condition class.

The timber inventory reduction for each analysis area was determined for the period between 1970 through 1985 from the Forest Timber Management Control Record of actual volume (MBF) harvested. An estimate of total area harvested during this period, using average volume cut per acre, was made based upon professional judgement. The total estimated area harvested was then allocated to each District as per their share of the Forest's harvest. District personnel then adjusted acres by condition class by analysis area based on timber sale records and personal knowledge.

The total Forest sawtimber inventory on tentative capable, available and suitable (CAS) land, after the adjustments were made, was then subtracted from the sawtimber inventory before the adjustments. The differences between these two inventory estimates represent the new sawtimber reduction for the period 1970 through 1985. The difference between the new reduction and harvest therefore represents the estimated net growth included in the Forest Plan analysis. No further adjustment to the net sawtimber reduction was made for the difference between the before and after inventory. The following is the result of that comparison

Sawtimber Inventory on Tentative CAS Land 1970	= 10,255 MMBF
Estimated Sawtimber Inventory on Tentative CAS Land, 1985	= 9,193 MMBF
Net Reduction	= 1,062 MMBF
Harvested olume 1970 - 1985	= 2,116 MMBF
Estimated Growth	= 1,054 MMBF



E.0

APPENDIX E - FIRE OBJECTIVES AND STRATEGIES

The following table summarizes fire suppression strategies planned for each Management Area. Table E.01 is required for this Plan.

TABLE E.01 - FIRE SIZE OBJECTIVES AND SUPPRESSION STRATEGIES

MANAGEMENT AREA	FMAZ*	MAXIMUM ACRE SIZE OBJECTIVE (90% OF THE TIME)	FIRE INTENSITY LEVEL	SUPPRESSION RESTRICTION	SUPPRESSION STRATEGY
1	2	5	1-6	Minimize Visual Impact	Control
		5			Control
2	3	10	1-6	None	Control
		10			Control
3	4	See management standards and guidelines 4.5.18 - #222			
4	1	20	1-2	None	Contain
		10	3-6	None	Control
5	5	100	1-2	None	Control
		50	3-6	None	Control
6	5	10	1-2	None	Control
		5	3-6	None	Control
7	1	5	1-6	Experimental Forest	Control
8	5	10	1-2	Experimental Forest	Contain
		5	3-6		Control
9	1, 5	5	1-6	Minimize Dozer Impacts	Control
10	1, 5	5	1-6	Minimize Dozer Impacts	Control
11	2	20	1-2	Minimize Visual Impact	Contain
		10	3-6		Control
12 north	4	200	1-2	None	Control
12 south	4	200	3-6	None	Confine
			1-2	Minimize Visual and Dozer Impacts	Control
			3-6		Control

\* Fire Management Analysis Zone



## **F.0 APPENDIX F - WATER QUALITY MANAGEMENT - BEST MANAGEMENT PRACTICES AND PROCESS**

### **F.1 INTRODUCTION**

The Forest Service water quality maintenance and improvement measures, called Best Management Practices (BMP), were developed in compliance with Section 208 of the Federal Clean Water Act, PL 92-500, as amended. After a lengthy development and public review process from 1977 to 1979, the practices developed by the Forest Service were certified by the State Water Resources Control Board and approved by EPA. The signing of a 1981 Management Agency Agreement (MAA) resulted in the formal designation of the Forest Service as the water quality management agency for the public domain lands it administers. The BMP are the measures both the State and Federal water quality regulatory agency expect the Forest Service to implement to meet water quality objectives and to maintain and improve water quality. There are currently 98 practices documented, 96 which are certified and approved as BMP. The two remaining practices are under review before referral to the State and EPA for certification and approval. Work continues on developing new management practices and evaluating the effectiveness of the existing BMP. Due to the dynamic nature of management practice development and refinement, the original Forest Service publication documenting BMP is continually revised. The current publication reference is: WATER QUALITY MANAGEMENT FOR NATIONAL FOREST SYSTEM LANDS IN CALIFORNIA, USDA Forest Service, Pacific Southwest Region Publication, 1979. This publication is incorporated by reference into this document. Work is underway to publish the revised version of this document as a Soil and Water Conservation Handbook.

Water quality management is administered in National Forests through the continued implementation of BMP and through the guidance of a 1981 MAA with the State of California Water Resources Control Board

### **F.2 IMPLEMENTATION PROCESS**

Forest Plans are broad level planning documents that encompass the entire forest and a multitude of different management activities. Because of the diversity of any

given National Forest (different soils, vegetation, slopes, presence of surface water, etc ) and the mixture of activities that occur, site specific methods and techniques for implementing the BMP are not identified at the Forest's planning level. For each individual project that is initiated to implement the Forest Plan, a separate site-specific environmental assessment is conducted. The appropriate BMP necessary to protect or improve water quality and the methods and techniques of implementing the BMP are identified at the time of this on-site, project-specific assessment. In this manner the methods and techniques can be tailored to fit the specific environment, as well as the proposed project activities. There are commonly many methods available for implementing a BMP, and not all are applicable to every site.

An example is BMP 2.7, Control of Road Drainage. This BMP dictates that roads will be correctly drained to disperse water runoff, which minimizes the erosive effects of concentration. There are many ways to drain a road correctly; such as, outslope the road surface, install water bars, install French drains, inslope the road surface, and install culverts. It is during the on-site environmental assessment of a specific road construction project proposal that the appropriate method or combination of methods, to correctly drain the road, are identified.

After the methods and techniques of implementing the appropriate BMP are identified, they are discussed by the project ID team. As a result, the appropriate mix of implementation methods and techniques are selected and incorporated into the environmental document as required mitigation measures. These mitigation measures are then carried forward into project plans and implementation documents, such as contract language and design specifications, which assures they are part of the project work. Implementation on the ground is assured by the Forest Service official who is responsible for on-site administration of the project. Supervisory quality control of BMP implementation is attained through review of environmental assessments and contracts, field reviews of projects, and when warranted, monitoring the quality of the water in the project area

### **F.3 THE BEST MANAGEMENT PRACTICES**

There are 98 practices identified in eight resource categories. Two practices (marked with asterisks) have not been recommended for certification and approval at this time. The practices are listed in the following table:

**TABLE F.01 - RECOMMENDED BEST MANAGEMENT PRACTICES**

<b>TIMBER</b>	
1.1	Timber Sale Planning Process
1.2	Timber Harvest Unit Design
1.3	Use of Erosion Hazard Rating for Timber Harvest Unit Design
1.4	Use of Sale Area Maps for Designating Water Quality Protection Needs
1.5	Limiting Operating Period of Timber Sale Activities
1.6	Protection of Unstable Areas
1.7	Prescribing the Size and Shape of Clearcuts
1.8	Streamside Management Zone Designation
1.9	Determining Tractor Loggable Ground
1.10	Tractor Skidding Design
1.11	Suspended Log Yarding in Timber Harvesting
1.12	Log Landing Location
1.13	Erosion Prevention and Control Measures During Timber Sale Operations
1.14	Special Erosion Prevention Measures on Disturbed Land
1.15	Revegetation of Areas Disturbed by Harvest Activities
1.16	Log Landing Erosion Prevention and Control
1.17	Erosion Control on Skid Trails
1.18	Meadow Protection During Timber Harvesting
1.19	Streamcourse Protection
1.20	Erosion Control on Skid Trails
1.21	Acceptance of Timber Sale Erosion Control Measures Before Sale Closure
1.22	Slash Treatment in Sensitive Areas
1.23	Five-Year Reforestation Requirements
1.24	Nonrecurring "C" Provision That Can Be Used For Water Quality Protection
1.25	Modification of the Timber Sale Contract
<b>ROAD AND BUILDING SITE CONSTRUCTION</b>	
2.1	General Guidelines for the Location and Design of Roads
2.2	Erosion Control Plan
2.3	Timing of Construction Activities
2.4	Road Slope Stabilization (Prevention Practices)
2.5	Road Slope Stabilization (Administrative Practice)
2.6	Dispersion of Subsurface Drainage from Cut and Fill Slopes
2.7	Control of Road Drainage
2.8	Constraints Related to Pioneer Road Construction
2.9	Timely Erosion Control Measures on Incomplete Road and Streamcrossing Projects
2.10	Construction of Stable Embankments
2.11	Minimization of Sidecast Material
2.12	Servicing and Refueling Equipment

2.13	Control of Construction in Streamside Management Zones
2.14	Controlling In-channel Excavation
2.15	Diversion of Flows Around Construction Sites
2.16	Streamcrossings on Temporary Roads
2.17	Bridge and Culvert Installation
2.18	Regulation of Streamside Gravel Borrow Areas
2.19	Disposal of Right-of-Way and Roadside Debris
2.20	Specifying Riprap Composition
2.21	Water Source Development Consistent with Water Quality Protection
2.22	Maintenance of Roads
2.23	Road Surface Treatment to Prevent Loss of Materials
2.24	Traffic Control During Wet Periods
2.25	Snow Removal Controls to Avoid Resource Damage
2.26	Obliteration of Temporary Roads
2.27	Restoration of Borrow Pits and Quarries
2.28	Surface Erosion Control at Facility Sites
<b>MINING</b>	
3.1*	Administering Terms of the U S Mining Laws (Act of May 10, 1872) for Mineral Exploration and Extraction on National Forest System Lands ( <b>PRACTICE NEEDS IMPROVEMENT</b> )
3.2	Administering Terms of BLM Issued Permits or Leases for Mineral Exploration and Extraction on National Forest System Lands
3.3	Administering Common Variety Mineral Removal Permits
<b>RECREATION</b>	
4.1	Sampling and Surveillance of Designated Swimming Sites
4.2	On-site Multidisciplinary Sanitary Surveys Will be Conducted to Augment the Sampling of Swimming Waters
4.3	Provide Safe Drinking Water Supplies
4.4	Documentation of Water Quality Data
4.5	Control of Sanitation Facilities
4.6	Control of Refuse Disposal
4.7	Assuring that Organizational Camps Have Proper Sanitation and Water Supply Facilities
4.8	Water Quality Monitoring Off-Road Vehicle Use According to a Developed Plan
4.9	Sanitation at Hydrants and Faucets Within Developed Recreation Sites
4.10	Protection of Water Quality Within Developed and Dispersed Recreation Areas
4.11	Location of Pack and Riding Stock Facilities in Wilderness, Primitive, and Wilderness Study Areas

<b>VEGETATIVE MANIPULATION</b>	
5.1	Seed Drilling on the Contour
5.2	Slope Limitations for Tractor Operation
5.3	Tractor Operation Excluded from Wetlands and Meadows
5.4	Revegetation of Surface Disturbed Areas
5.5*	Tractor Windrowing on the Contour (PRACTICE NEEDS IMPROVEMENT)
5.6	Soil Moisture Limitations for Tractor Operation
5.7	Contour Disking
5.8	Pesticide Use Planning Process
5.9	Apply Pesticide According to Label and EPA Registration Directions
5.10	Pesticide Application Monitoring and Evaluation
5.11	Pesticide Spill Contingency Planning
5.12	Cleaning and Disposal of Pesticide Containers and Equipment
5.13	Untreated Buffer Strips for Riparian Area and Streamside Management Zone (SMZ) Protection During Pesticide Spraying
5.14	Controlling Pesticide Drift During Spray Application
<b>FIRE SUPPRESSION AND FUELS MANAGEMENT</b>	
6.1	Fire and Fuel Management Activities
6.2	Consideration of Water Quality in Formulating Fire Prescriptions
6.3	Protection of Water Quality from Prescribed Burning Effects

6.4	Minimizing Watershed Damage from Fire Suppression Efforts
6.5	Repair or Stabilization of Fire Suppression Related Watershed Damage
6.6	Emergency Rehabilitation of Watersheds Following Wildfires
<b>WATERSHED MANAGEMENT</b>	
7.1	Watershed Restoration
7.2	Conduct Floodplain Hazard Analysis and Evaluation
7.3	Protection of Wetlands
7.4	Oil and Hazardous Substance Spill Contingency Plan
7.5	Control of Activities Under Special Use Permit
7.6	Water Quality Monitoring
7.7	Management by Closure to Use (Seasonal, Temporary, and Permanent)
<b>GRAZING</b>	
8.1	Range Analysis, Allotment Management Plan, Grazing Permit System, and Permittee Operating Plan
8.2	Controlling Livestock Numbers and Season of Use
8.3	Controlling Livestock Distribution Within Allotments
8.4	Rangeland Improvements

*“I Love It When  
A Plan Comes  
Together”*

*The “Sierra” Team*

