Chapter 3 - The Summary of the Analysis of the Management Situation

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Chapter 3 - Summary of the Analysis of the Management Situation

Introduction

This chapter summarizes the Analysis of the Management Situation (AMS), a set of documents which examines the existing situation for each resource of the Klamath National Forest (Forest). The AMS is part of the planning records.

The sections labeled Forest Plan describe how the Forest Land and Resource Management Plan (Forest Plan) addresses resources uses, opportunities and production potentials.

Chapter 3 - Affected Environment - of the accompanying Environmental Impact Statement (EIS) describes each resource in detail.

Physical Environment

Geology

The Forest lies within 3 physiographic provinces: the Klamath Mountains, Cascades and Modoc Plateau.

Geological Hazards and Resources

Landslide hazards, hazardous materials, seismic hazards, volcanic hazards, snow avalanche hazards, and land subsidence and collapse hazards have been identified on the Forest. Geologic resources on the Forest include minerals, rock materials, ground water, oil and gas, geothermal resources and areas of unique geological value.

Landslide Hazards

Landsliding is a natural process which is also influenced by routine forest management activities such as road construction and timber harvest. Landslides constitute the most significant of the geologic hazards on the Forest, particularly in the Klamath Mountains Province, and in the Cascades Province adjacent to the Klamath River.

The Geomorphic Terranes which are most prone to landsliding occupy about 40% of the forest, and non-sensitive lands occupy the other 60%.

Hazardous Materials

Hazardous materials on the Forest include asbestos, radon and a variety of materials associated with abandoned mines and landfills such as heavy metals and acid drainage. The issue of hazardous materials has grown larger in the past few years. Levels above maximum exposure limits have not been identified on the Forest. Negligible amounts of radon have been reported.

Seismic Hazards

No potentially active faults were identified on the Westside of the Forest. Numerous active faults have been identified in the Butte Valley Area.

Volcanic Hazards

Volcanic hazards exist on the Goosenest Ranger District. They have a low probability of occurrence with return periods in the hundreds or thousands of years. Mount Shasta has erupted 3 times in the past 750 years. The odds are 1 in 25 or 30 that it will erupt in any given decade.

Forest Plan

The Forest Plan will manage unstable and potentially unstable areas as Riparian Reserves (RRs) in accordance Aquatic Conservation Strategy Objectives. Standards and guidelines to minimize the risks of landslides are included in the Forest Plan. Landslide stabilization is part of the watershed restoration program. Money will be requested to complete inventories of geological hazards.

Soils

The soils on the Forest are variable due to differences in parent material, climate, topography, biology and age.

Soil Productivity

The Soil Resource Inventory shows that about 17% of the Forest is in Forest Survey Site Classes 1 and 2, about 19% in Site Classes 3 and 4, about 44% in Site Classes 5 and 6, and about 20% in Site Class 7.

Soil Erosion Hazard

The Soil Resource Inventory is used to classify Forest soils into the following 4 maximum Erosion Hazard Ratings: low, moderate, high and very high. About 20% of the Forest is classified with a maximum Erosion Hazard Rating of very high, 45% as high, 28% as moderate, and 7% as low. Generally, a maximum Erosion Hazard Rating of very high occurs on sandy soils derived from granitic bedrock on steep slopes.

Conifer Regeneration Potential

Reforestation certification reports (monitoring of seedling survival in plantations) completed by the Forest from 1982 to 1987 show that approximately 88% of the plantation acreages are successfully re-stocked with desirable seedlings. The remaining

12% of the plantation acreage fails to meet stocking requirements due to a combination of poor soil regeneration potential, poor planting stock, vegetative competition and dry weather following planting.

Soil Resources

The existing road system is the primary source of non-point pollution on the Forest. The opportunity exists to upgrade the unsurfaced roads that have soils with less than 80% gravel content by surfacing with gravel, crushed rock or some other long-term stabilizing material for erosion control.

The soils most sensitive to wind and water erosion are loose sandy and silty soils without ground cover. Vegetative removal has little direct effect on the erosion from these soils. Much more important is the ground cover and organic liner from the vegetation. Soils bare of vegetation but with 50 to 80% ground cover are effectively protected from wind or water erosion.

Suitability

The Forest land base is divided into CAS (capable, available, suitable) lands and non-CAS lands. Land is classified as incapable if ft cannot grow a minimum of 20 cubic feet per acre per year of wood fiber, at culmination of mean annual increment.

Marginal lands on the Forest usually occur on soils that are shallow, droughty and may have a nutrient imbalance as in serpentine soils. Marginal lands can be intensively managed for wood products although projected yields are low because of the low productivity.

Soils with low regeneration potential east of Interstate 5 are located on droughty pumice or cindery volcanic soils that are at high elevation with low precipitation. The soils west of Interstate 5 with low regeneration potential are droughty very gravelly, very cobbley or sandy soils on west or south aspects at low elevation or are shallow soils on serpentine parent material.

Coarse Woody Debris

The amount of coarse woody debris (CWD) varies by site on the Forest. Broadcast burning, handpile and burning, yarding unusable material and tractor pile and burning can deplete the amount of CWD on a site. Contract provisions are used to insure that an adequate number of large logs are retained following treatment.

Forest Plan

The watershed restoration program in the Forest Plan will emphasize removing and upgrading problem roads which should reduce soil erosion. The aggressive fuel reduction program will help prevent future soil damage by reducing the likelihood of fires burning at high intensities.

Water

Watershed Conditions

The watersheds, which make up the Forest, vary widely in condition. The EIS provides a summary of condition classes for lands within the National Forest System (NFS) watersheds.

Riparian and Channel Conditions

Many riparian areas are changed from what they were 50 years ago, as evidenced by 1945 aerial photos. The changes consist of fewer large trees in the riparian area, especially conifers, and a much greater extent of bare areas now as compared to the past. Most of these changes are attributed to the 1964 flood, others are attributed to disturbance by human activity or a combination of floods, fires and human activity. A number of streams have experienced debris flows during the 1964 flood and at other times. These debris flows, which occur during intense thunderstorms as well as during lengthy rainstorms, may be the most important channel-shaping process that occur on the Forest.

Cumulative Watershed Effects

The Forest Service currently considers all effects of proposed actions in a watershed regardless of land ownership. Management activities on NFS lands are restricted or mitigated in watersheds where cumulative effects may cause established thresholds to be exceeded.

Water Quality

The quality of water produced on the Forest varies greatly depending on the season and the location. Sediment discharge and associated turbidity varies greatly depending on the intensity and duration of storms and the amount of time since the most recent sediment producing storm. In general, sediment yield decreases going from west to east. The primary sediment producing activity varies from area to area.

Water Yield

The removal of conifers and other vegetation may increase water yields. Streams and lakes on the Forest generally meet the demand for municipal and rural domestic needs, with the exception of portions of the Scott River, Shasta River and the Butte Valley area. In shortage areas, agricultural uses may compete with instream uses for limited water supply during normal and especially during drought years. The current average annual water

discharge for each NFS watershed is displayed in the EIS.

Watershed Restoration

Watershed restoration projects provide opportunities to improve degraded conditions which adversely affect beneficial uses. The Watershed Improvement Needs (WIN) Inventory identifies and prioritizes watershed improvement projects opportunities. The types of work accomplished currently include primarily stream bank and stream bed stabilization (97%), landslide stabilization (3%), road drainage improvement, erosion control and revegetation of degraded riparian and upland sites.

Forest Plan

The Aquatic Conservation Strategy, which includes RRs, Key Watershed, watershed analysis and watershed restoration, will help provide water that is of high quality for domestic needs and other resource uses.

Air

Air quality on the Forest is very good. Currently the Forest complies with all National Ambient Air Quality Standards which are set by the Environmental Protection Agency to establish the maximum concentrations for pollutants. The Federal Clean Air Act establishes air quality classifications. The Forest has one Class I area, the Marble Mountain Wilderness, and is adjacent to another, the Lava Beds National Monument. Protection of air quality related values through non-degradation is required in Class I areas. The rest of the Forest, including the other wilderness areas, are identified as Class II areas which have less stringent requirements.

Forest Plan

Air Quality Related Values have been described for the Marble Mountain Wilderness Class I Airshed in Appendix F of this Forest Plan. They can be used to monitor air quality in the wilderness and to coordinate with other agencies in air quality protection. Forest monitoring of air quality will be on-going.

Biological Environment

Biological Diversity

Description

Biological diversity, sometimes called biodiversity, is the variety of living things in an area and the ecological processes in which they function as a system. Changes in the vegetative and animal diversity of the Forest may be described in terms of resource interactions and ecological processes.

A forest that is healthy, resilient, productive and versatile over the long-term is one that will support a wide variety of living things and communities. Mixtures of different plants and animals on land and in the water, living in groups of various sizes and ages, may also be more capable of supplying the needed commodities and desired elements from NFS lands. The National Forest Management Act (NFMA) of 1976 requires the management of National Forests to 'provide for the diversity of plant and animal species based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives....'

Elements of Biological Diversity

Elements of biological diversity are important at the Regional, watershed and stand levels. Genetic, species and community diversity are important at all scales.

Managing for ecosystem diversity involves maintaining micro-habitats for some species, large blocks of habitat for other species and quality riparian and aquatic habitat for others. Research indicates that greater habitat diversity allows for greater species diversity.

Compositional Elements of Biological Diversity

Vegetation Types

The Timber Inventory divides forest land into the following vegetative groups: ponderosa pine (99,000 acres), eastside mixed conifer (104,000 acres), Westside mixed conifer (721,000 acres), Douglas-fir (337,000 acres), lodgepole pine (14,600 acres), eastside true fir (27,000 acres), Westside true fir (87,000 acres) and hardwoods (14,800 acres). These types are discussed below under Seral Stages. The other 276,000 acres of the Forest supporting non-forest vegetation or non-commercial trees is discussed under Rangeland Types.

Seral Stages

The vegetative attributes and processes within stands change over time. Similar attributes and conditions at a given point in time can be grouped by seral stages. The grouping of vegetation by seral stages helps provide a predictable pattern to the environment. However, there is a great deal of variation in the attributes (such as age, structure and composition) for each seral stage.

Management activity influences can be similar to fire's influence on seral stages. About 179,000 acres of vegetation, 11% of the Forest, have been manipulated to provide wood fiber outputs, salvage fire-damaged trees or improve vegetative conditions for specific resources. Refer to Chapter 3 of the EIS for descriptions of seral stages on the Forest.

Rangeland Types

Until the Forest-wide ecological classification system is completed, the following broad categories can serve for non-forest vegetation and non-commercial trees: Western Juniper/Big Sagebrush/Bluebunch Wheatgrass, Riparian Woodlands, Scrub Oak Mixed Chaparral, Ceanothus Mixed Chaparral, Montane Shrubland, Bitterbrush, Montane Meadows, Alpine Grassland and Wetlands.

Community and Species Diversity

Certain groups of plants and animals are commonly found in association with specific vegetative types and seral stages on land and with specific stream or lake conditions in the water. Refer to Habitat Conditions in the Fisheries section for a discussion of elements important for aquatic community and species diversity' At the forest level, species diversity is at Its greatest when the maximum number of different habitats are available and the species are able to make use of the habitats.

Genetic Diversity

Maintaining long-term viability of all aquatic and terrestrial species which includes having healthy and vigorous populations, depends partly on having adequate genetic variability within and between populations.

Structural Components of Biological Diversity

Forest stands and communities have a variety of structural elements including size and density of vegetation; the number, size and type of snags; the hardwood component; and CWD on the forest floor. These features vary greatly depending on the frequency and intensity of fires, the vegetation that occupied the site before the fire, the occurrence of disturbance, or past management activities.

Snags are an important habitat requirement for many species. Hardwoods are a major vegetative component in many forest and rangeland types. Refer t Chapter 3 of the EIS for information on hardwood and snag levels found on the Forest.

Information on the amount of CWD on the Forest is scarce. Information from Smith (ponderosa pine) and Jimerson (Douglas-fir, true fir) indicate that 0 - 4 pieces of CWD (20 inches diameter breast height (DBH) and 20 feet long) may be common in the later seral stages of ponderosa pine. In the later sera] stages of Douglas-fir, 9 - 13 pieces of CWD (20 inches DBH and 10 feet long) may be common. The level of CWD is quite variable, especially within later seral stages. Past fire history and occurrences, vegetative canopy and aspect all contribute to the levels of CWD found on a site.

Landscape vegetative Patterns

The size, shape and distribution of vegetative patches determine their function in the overall vegetative mosaic.

Patch size is quite variable, ranging from less than an acre to over 1,000 acres on the Forest. The average patch size for late-seral stages on the Forest is between 45 and 50 acres, with a shape index of 0.39 (refer to Chapter 3 of the EIS). Areas harvested for wood fiber outputs are generally more circular in shape and smaller in size than those which have had little or no human influence.

"Old Growth"

For this analysis, 'old growth' is described in a general way, combining information from many published descriptions of 'old growth.' (Refer to Chapter 3 of the EIS for a detailed description).

Connectivity and Fragmentation

Connectivity is intended to provide for plant and animal species that are distributed as collections of populations and are linked together by movement between individuals within the population. In the Klamath Mountains Province, these assumptions may not always apply due to the fragmentation that typically exists on the Forest. The connecting habitat may not meet all of the species habitat requirements.

Current management activities provide many opportunities for the movement of plants and animals. Stream courses (200,000 acres of riparian areas), Wild and Scenic river areas, wilderness, HCAS, visual resource opportunities and Threatened and Endangered (T&E) species habitat provide habitat and conditions necessary to meet dispersal needs.

The high degree of endemism (species found on the Forest but nowhere else in the world) in this region is evidence that natural connectivity for some species on the Forest is low due to rivers, topography or other barriers. The complex vegetative mosaic on the Forest results in a

fragmented landscape pattern (refer to the Seral Stage Map in map packet).

Function of Forest Ecosystems

Discussions of seral stage changes, nutrient cycling, species diversity and genetic diversity are included in Chapter 3 of the EIS. The timber inventory and fire history information reflects a relatively short turn-over rate for vegetation on the Forest.

Ecosystem Health

Fire, insect infestations and diseases are a part of functioning forests, rangelands and aquatic systems. They play an important role in shaping the vegetative diversity.

Refugia

Areas of contiguous habitat, or habitat attributes upon which some species depend, may serve as refuges for some species. These areas ideally contain large numbers of species or high concentrations of plants or animals from which populations can expand into other areas. This is the basis of the refugia concept Refugias are applicable to terrestrial habitats in al. seral stages as well as to aquatic habitats.

Forest Plan

The land allocations and standards and guidelines associated with the Forest Plan are expected to provide for healthy, resilient, productive ecosystems which can support viable populations of diverse species as well as other resource outputs in a sustainable manner. The monitoring plan presented in Chapter 5 is expected to provide a mechanism for evaluating the success of Forest Plan implementation. The aggressive fuel program is expected to reduce the risk of devastating, high intensity fires and to return fire to its regulating role in ecosystem processes. Management activities, such as salvage, thinning and prescribed natural fire in land allocations where they are permitted, are expected to improve ecosystem health.

Riparian Management

A riparian ecosystem is the transition between the aquatic ecosystem and the adjacent terrestrial ecosystem.

Riparian-Dependent Resources: Riparian-dependent resources include aquatic and semi-aquatic invertebrate and vertebrate species, wildlife species, T&E species, Sensitive native plant species, water quality, visual quality and aesthetic riparian values.

Water, native plant species and communities, wildlife and fisheries are the primary dependent resources in riparian areas (refer to the Water, Sensitive Plant, Wildlife and Fisheries sections in this chapter). Riparian areas provide habitat for more wildlife species than do other habitat types.

Wetlands and riparian areas are currently managed to provide for wildlife, fish, water and other riparian-dependent resources. Other management activities are permitted if riparian-dependent resources are not adversely affected.

Forest Plan

The Forest Plan will manage riparian areas and many other areas as RRs in accordance with Aquatic Conservation Strategy objectives. These land allocations and the rest of the ecosystem approach are expected to maintain high quality water and healthy, resilient aquatic ecosystems.

Sensitive Plant Species

The Forest consists of complex vegetation patterns and an unusually rich and varied flora. Many of the plant species found on the Forest have restricted distributions. The Forest contains several plant species not found elsewhere in the world. Of the many species unique to our area, some are so rare that they require special management to ensure their continued existence.

The U.S. Fish and Wildlife Service (USFWS) monitors and prescribes management for Federally listed T&E plant and animal species. There are no plant species currently listed as T&E on the Forest.

On the Forest, 33 species of plants have been listed by the Regional Forester as Sensitive. The Sensitive plant species found on the Forest inhabit many different types of habitats. Some Sensitive species' habitat requirements are still not understood.

Most of these Sensitive species (about 88%) are found on the Westside of the Forest in the Klamath and Siskiyou Mountains. The remaining 12% are associated with the eastside volcanic geology and soils typical of the Cascade Range. (Refer to Chapter 3 of the EIS.)

The number of populations or plants known to exist for each species varies. Ongoing botanical surveys throughout the Forest determine the abundance, distribution and habitat requirements of Sensitive plant species. Species Management Guides have been written for several Sensitive plant species on the Forest.

Forest Plan

The standards and guidelines for the Forest Plan are expected to provide for the viability of Sensitive plant species.

Wildlife

Description

The wide mixture of physical and biological conditions found on the Forest provide for a multitude of wildlife species. The Forest is home to 372 species of wildlife, including 92 mammals, 237 birds, 20 amphibians and 23 reptiles, which live in a wide array of habitats.

T&E and Proposed Species

Four Federally listed species are found on the Forest: bald eagle, peregrine falcon, northern spotted owl and marbled murrelet.

Bald eagle and peregrine falcon are classified as Endangered in the State of California. They are managed in accordance with their recovery plans.

The recovery plans for the northern spotted owl and marbled murrelet which are classified as Threatened under the Endangered Species Act (ESA) are currently being prepared. Once completed, these recovery plans will be implemented on the Forest. There have been **a** few detections of the marbled murrelet on the western portion of the Forest. Refer to Chapter 3 of the EIS for further information relating to these species.

Forest Service Sensitive Species

Sensitive species were identified by the Regional Forester due to concerns for the viability of their populations. These concerns were evidenced by significant current or predicted downward trends in population numbers, density, and/or habitat quantity and quality. The Region 5 Sensitive species known or suspected to occur on the Forest are American marten, Pacific fisher, northern goshawk, great gray owl, and willow flycatcher. Refer to Chapter 3 of the EIS for further information relating to these species.

Candidates For Federal Listing

Candidate species are species under consideration for possible listing as Endangered or Threatened. Candidate species have no protection under the ESA. The USFWS encourages project leaders to consider the impacts to candidate species when planning resource management activities. The candidate species known or suspected to occur on the Forest are Siskiyou mountain salamander, Del Norte salamander, Ferruginous hawk, loggerhead shrike, Pacific western big-eared bat, California wolverine and the Karuk Indian snail. Refer to Chapter 3 of the EIS for further information relating to these species.

Management Indicator Species

Six individual management indicator species (MIS) species and 6 multi-species assemblages were selected to gauge the effects for each alternative proposed in the EIS and monitor the effects of Forest Plan implementation. Each species within the multi-species assemblages will respond somewhat differently to various management activities that may occur.

Monitoring several species, with similar or overlapping habitat needs, will provide a better reflection of the range of responses by all wildlife species associated with a given habitat or habitat element. Habitat associations of each MIS species are discussed in the EIS, Chapter 3.

Individual Species

Northern spotted owl: The spotted owl is expected to be sensitive to habitat changes since the species is fairly specific in its habitat needs. Also, the owl represents other wildlife species which require mature and old growth' forest habitat for all or part of their life cycle.

Northern goshawk: The northern goshawk is associated with mature forest habitat in all coniferous types on the Forest. It prefers open understories and may be a better indicator of mature forest conditions in eastside habitats and at higher elevations than the owl.

Black bear: The black bear occurs throughout the Forest and utilizes a variety of habitats and seral stages. Black bear was selected as a MIS due to its habitat associations with early and late seral stages and its need for large down logs.

American marten: Marten is a good indicator of habitat quality since it is uniquely associated with true fir vegetation types, is habitat specific and requires large logs for resting and denning.

Pacific fisher: Fisher is a good indicator of habitat quality because ft is habitat specific, especially in its denning and resting needs.

Black-tailed deer: The black-tailed deer was selected as a MIS because of its association with early and mid-sera[stage vegetation types. It is also an important game species.

Multi-species Assemblages:

Hardwood Species: Oaks, especially California black oak and Oregon white oak, are important vegetation types and habitat components. Acorns provide an abundant and highly nutritious food source for many species. Acorn woodpeckers and western gray squirrels represent this habitat type.

River/Stream Species: Rainbow trout, steelhead, tailed frogs, Cascades frogs and American dippers represent the aquatic species associated with the actual watercourse. Rainbow trout and steelhead are described in the Fisheries section. Northern water shrews and long-tailed voles represent the terrestrial species associated with riparian vegetation. The 7 fish and wildlife species were chosen for their sensitivity to channel conditions and to the quality of riparian vegetation.

Marsh/Lake/Pond Species: Standing, open water and its associated vegetation provides unique habitat for many species. Northern red-legged frogs and western pond turtles were chosen to represent this habitat type for their sensitivity to physical aquatic conditions and CWD.

Snag Species: Seven species, depending on snags for all or part of their life cycle, were chosen to represent this important habitat element. These species are the red-breasted sapsucker, Downy woodpecker, white-headed woodpecker, Hairy woodpecker, black-backed woodpecker, pileated woodpecker and Vaux's swift.

Grassland and Shrub-steppe Species: These habitat types are found primarily on the Butte Valley National Grassland. Pronghorn, montane voles, Swainson's hawk, loggerhead shrike, sage thrashers and burrowing owls were selected to represent coverage of perennial grasses, increased mesic conditions and development of a diverse sagebrush/grassland mosaic.

Mature Ponderosa Pine Forest Species: Ponderosa pine stands occur on the eastern portion of the Forest. The stands are typically associated with dry conditions and short fire return intervals and exhibit an open stand structure. White-headed woodpeckers, flammulated owls and pinyon jays represent this habitat type.

Projected Demands

Public lands offer the greatest opportunity for hunting in Siskiyou County, since few people have access to private lands. The Forest provides hunting opportunities for local residents, as well as persons from out of state.

Projects, specifically designed to benefit wildlife, have traditionally been targeted at game species. ft is expected that future management will place greater emphasis on non-game wildlife, especially Federally T&E, Forest Service Sensitive, and 'old growth" species.

Forest Plan

The creation of Late-Successional Reserves (LSRS) and RRs, plus the other elements of an ecosystem approach such as the Aquatic Conservation Strategy, are expected to provide for the viability of late-successional species. These land allocations and other allocations such as General Forest and Forage are expected to provide for early and mid-successional species.

Fisheries

The fish species that occur on the Forest can be categorized into 2 major groups, anadromous and resident. The anadromous group includes salmonids, shad, lamprey, eulachon and sturgeon. The resident or inland salmonids include rainbow trout, eastern brook trout, golden trout, cutthroat trout, brown trout and Arctic grayling. The non-salmonid group includes various warm and cold water fish (refer to Chapter 3 of the EIS).

Threatened and Endangered Species

There are currently no known aquatic species listed under ESA on the Forest. Petitions to list coho salmon and coastal steelhead (which would include both summer- and winter-run steelhead) are being reviewed by the National Marine Fisheries Service.

Forest Service Sensitive Species

Summer steelhead and Klamath River spring chinook salmon are classified in Region 5 as Sensitive species due to viability concerns as evidenced by current downward trends in population numbers, densities and habitat quality or quantity.

Species Associations

The species associations selected to gauge the effect of Forest Plan implementation on the aquatic ecosystem are discussed in the Wildlife section under River/Stream Species and Marsh/Lake/Pond Species.

Fish Populations

Anadromous fish are defined by the characteristic of spawning in freshwater, emigrating to the ocean after a few months to several years (dependent upon species) and growing to adulthood in the ocean in 1 to 5 years. The Forest watersheds make a major contribution to the anadromous fishery of the Klamath River The Salmon River watershed contributes the largest portion of anadromous habitat.

A variety of resident fish inhabit Forest waters. Refer to Chapter 3 of the EIS for further information of fish populations.

Recreational Fishing

In 1989, a total of 49,800 anadromous fish user days were attributed to the Forest. Of this total number, 45,400 occurred on Forest, 3,900 occurred in the Klamath River system below the Forest boundary and about 500 occurred in the ocean sport fishery. In addition, on-Forest warm water fisheries accounted for about 450 fish user days

and cold water resident fisheries accounted for 29,700 fish user days.

Management Direction

Under its directives, the Forest is responsible for maintaining suitable fish habitat that will support well distributed, viable populations of native and desirable non-native fish. The California Department of Fish and Game (CDFG) has the role of managing fish populations, stocking levels and fishing seasons. The USFWS has the role of assuring that the coordinated efforts of the habitat management agency and the population management agency maintains a viable population of native and desired non-native fish. Management of the stocks of anadromous stocks while they are in the ocean is done, in part, by the National Marine Fisheries Service (Department of Commerce).

Habitat Conditions

Existing habitat conditions have been, and will continue to be, shaped by ecological processes and events such as fire, floods, landslides, drought and management activities. Factors affecting habitat quality may vary from stream to stream. However, the overall quality of fisheries habitat can be broken into 5 components. These components are important within the aquatic, semi-aquatic and surrounding riparian area. They are also continually changing as ecological processes within the watershed modify and reshape the habitat. These components include:

1. Overall watershed conditions including upslope, riparian and instream conditions.
2. Water quality and quantity.
   a) water temperature.
   b) sediment levels.
   c) instream flows (amount and timing).
   d) stream nutrient levels.
3. Stream channel integrity.
   a) bank stability.
   b) sediment transport, aggredation and scour.
   c) substrate composition (includes the level of fines, sediment and embedded ness in spawning areas).
   d) habitat composition including primary pool frequency.
   e) water table level.
4. Vegetation.
   a) native and desired non-native plant communities and interactions.
   b) CWD and recruitment potential.
   c) stream canopy cover.
   d) riparian area ground cover.
5. Animal communities, populations and interactions.

Habitat criteria have been identified for the measurable elements associated with these habitat components. Refer to Chapter 3 of the EIS for criteria and for further information on habitat components and conditions.

Projected Demands

The future commercial, sport and Native American demand for fish will probably exceed the current productive capabilities of the Klamath system. Increases in production may be accomplished through active hatchery programs, or habitat improvement. Opportunities for the Forest to increase production levels is also dependent on off-Forest harvest and conditions. Environmental factors such as drought and flood could also affect production levels.

Forest Plan

The Forest Plan constitutes a movement away from single-species management to a broader-based ecosystem approach. The emphasis is on all aquatic species and on maintaining and restoring aquatic ecosystem health through the Aquatic Conservation Strategy. Watershed restoration is emphasized. Selection of the most beneficial projects will occur through ecosystem analysis at the landscape/watershed scale. High quality aquatic habitat will be conserved through the management of RRs and Key Watersheds. Cooperation with other agencies, tribal and community groups will be emphasized in habitat management.

Resource Management Programs

Visual Resource Management

Conservation of the naturally established scenic character of the Forest environment is the primary goal of visual management.

Forest landscapes have been altered by both human activities and by natural processes. Impacts from human activities are primarily the result of past logging, road building and, to a lesser extent, mining activity. The effects of fire are also noticeable on the landscape. At present, 74% of the Forest has a natural appearing character, while the remainder appears altered. Most of the strong visual contrasts occur either in the background distance zone or out of sight of major highways, trails and recreation areas.

Visual Quality Objectives

Five Inventoried and Adopted Visual Quality Objectives (VQOS) are used as visual yardsticks to evaluate both project impacts and Forest-level effects of planning alternatives. These VQOs are

Preservation, Retention, Partial Retention, Modification and Maximum Modification. (Refer to Chapter 3 of the EIS for definitions.)

Table 3-1, Inventoried VQO		
Name	Acres	Percent
Preservation	385,300	23
Retention	165,200	10
Partial Retention	664,000	39
Modification	414,200	25
Maximum Modification	51,600	3
Total	1,680,300	100

Table 3-2 lists the visual conditions on the Forest as they exist today.

Table 3-2. Existing Visual Condition (EVC)

Class	Name	Acres and Percent by Variety Class			
		Class A	Class B	Class C	Total
I	Untouched Landscapes	288,700 (17)	449,600 (27)	1,000 (0)	739,300 (44)
II	Unnoticed Alterations	23,200 (1)	248,000 (15)	24,500 (2)	295,700 (18)
III	Minor Disturbances	19,700 (1)	183,700 (11)	2,400 (0)	205,800 (12)
IV	Moderate Disturbances	23,300 (2)	154,500 (9)	1,900 (0)	179,700 (11)
V	Major Disturbances	4,800 (0)	97,300 (6)	300 (0)	102,400 (6)
VI	Drastic Disturbances	7,900 (0)	149,400 (9)	100 (0)	157,400 (9)
Total		367,600 (21)	1,282,500 (77)	30,200 (2)	1,680,300 (100)

Currently, 9% of the Forest land base (157, 000 acres) needs visual rehabilitation. Most occurs as a result of timber harvest activities that do not meet any IVQOS. (The EVC Type VI lands are identified above as “Drastic Disturbance.”)

Forest Plan

The Forest Plan designated the majority of the Forest, 79%, to land allocations which limit visually disturbing activities. Standards and guidelines identify VQOs and are designed so that VQOs can be achieved at the minimum level or at a less modified level.

Recreation Management

Description

The Forest offers visitors many recreational opportunities in a variety of settings. Forest attractions include highly scenic landscapes, abundant wildlife and many lakes, rivers and streams. The Forest has over 152 miles of Wild and Scenic Rivers (WSRS) and 381,000 acres of wilderness.

The most popular recreational activities are boating, camping, fishing, hiking, backpacking, horseback riding, hunting and winter sports.

Recreational Experiences

Developed recreation occurs at permanent sites developed specifically for recreational purposes, such as campgrounds, picnic grounds and trailheads. About 20% of present recreational use on the Forest occurs at developed sites.

Developed recreational sites on the Forest consist of 30 campgrounds, 2 picnic grounds, 9 trailheads, 3 observation sites and 7 visitor information sites. All developed sites are currently managed at low standard levels.

Several of the Forest's older campgrounds are functionally obsolete. These facilities need to be relocated or significantly redesigned to accommodate current visitor preferences.

Dispersed recreation is outdoor recreation that involves relatively low density use and occurs over broad expanses of land or water. Dispersed recreational activity accounts for 80% of Forest recreational use. Most dispersed activity occurs during the summer and fall months. All dispersed areas are currently managed at low standard levels.

Trail Management

The Forest trail system provides access for dispersed recreational activities. The Westside of the Forest has an extensive network of over 1,330 miles of trails. Many trails need reconstruction work, some need rerouting. Some trailhead facilities need to be improved or relocated.

Projected Demands

The Forest is surrounded by other National Forests and by State parks which provide similar recreational opportunities located closer to population centers. This has been a factor in keeping recreational use on the Forest relatively low on a Regional scale. Many areas on the Forest receive little use. Often during the peak of the recreation season, there are still spaces available in the Forest's campgrounds and picnic areas.

The Forest's recreational resources provide many opportunities for those seeking uncrowded conditions and a wide range of experiences. (Refer to Chapter 3 of the EIS for current inventoried recreation opportunity spectrum (ROS) acres, recreational use, maximum practical capacity in recreation visitor days (RVDS) and capacity in Persons At One Time.)

Anticipating recreational demand is very difficult. It varies with economic factors, recreationists' preferences and available ROS settings. One sign of future demand is current recreational use. Recreational use Nation-wide is currently increasing at a rate similar to that of population growth. (Refer to Chapter 3 of the EIS for demand projections.)

Forest Plan

Standards and guidelines, as well as land allocations, are designed to provide a broad array of recreational opportunities. Appropriate ROS conditions are identified for each management area. Barrier-free access, public information, organized recreational events and minimum impact use techniques are just a few of the emphasis items. Partners and cooperators will be actively sought.

Wilderness Management

Wilderness on the Forest include all of the Marble Mountain Wilderness (223,500 acres), all of the Russian Wilderness (12,700 acres), nearly half of the Siskiyou Wilderness (70,100 acres), part of the Trinity Alps Wilderness (74,900 acres) and a 5-acre portion of the Red Buttes Wilderness. Their total area represents almost 23% of the Forest's land base (over 381,000 acres).

Current fire management policy requires immediate action to suppress all fires in wilderness, regardless of location or how they were caused.

Forest Plan

The Forest Plan will change current policy by emphasizing the use of prescribed natural fire (PNF) in wilderness to allow lightning fires to play their ecological role. Trail reconstruction will be emphasized over relocation. Range permittees will be encouraged to take a more proactive approach to allotment management which could help reduce conflicts between people and cattle in wilderness.

Released Roadless Area Management

Identified as an important issue was the determination of the appropriate land use and the capability for each area released from potential wilderness designation by the California Wilderness Act of 1964. Appendix C of the EIS summarizes the history and the capabilities of each released area that still meets the original Second Roadless Area Review and Evaluation (RARE II) inventory criteria for roadless areas.

Forest Plan

The Forest Plan designates the upper portions of the Condrey Mountain Area and the eastern part of the Kangaroo Area as Backcountry to be managed for semi-primitive non-motorized recreational opportunities. No new roads would be constructed in roadless areas within Key Watersheds.

Wild and Scenic Rivers Management

Parts of the Klamath River system were designated as components of the California Wild and Scenic Rivers System by the State Legislature in 1972. In 1981, the Secretary of Interior included these components in the National Wild and Scenic Rivers (WSRS) System. The Wild and Scenic Rivers Act (WSRA) of 1968 (as amended in 1986 and 1988) provides for the preservation of those rivers (and their immediate environments) that have outstandingly remarkable values. Such values are scenic, recreation, geologic, fish and wildlife, historic, cultural or other similar values.

These rivers are to be preserved in a free-flowing condition and protected for the benefit and enjoyment of future generations. To accomplish this, the WSRA established the National WSR System, designated its initial components and prescribed the methods, standards and time frames for recommending additional components.

Current interim guidelines require managing a 1/4 mile-wide corridor, from the ordinary high water mark on each side for each component.

Wild and Scenic River Designations and Segment Classifications

The Klamath River and 3 of its tributaries on the Forest (Scott River, Salmon River and Wooley Creek) make up 200 miles of the National WSR System. All 3 classifications: Wild, Scenic and Recreational, are represented. Refer to Chapter 3 of the EIS for the currently designated components on the Forest with segment by-segment descriptions and classifications.

Classification Review

Three designated segments have been identified for potential reclassification per the 1986 amendment to the WSRA. All 3 segments meet the

guidelines for a Scenic classification and qualify for reclassification from Recreational.

The 2 segments on the Klamath River are from Seattle Creek to the private land boundary at Williams Point, and from Ti Bar to the mouth of the Salmon River. The segment on the South Fork Salmon River is from Cecilville Bridge to St. Claire Creek. Refer to Chapter 3 of the EIS for descriptions and mileage.

Potential Additions to the National System

In addition to those rivers currently designated, a Forest-wide review of rivers and streams was conducted for their WSR eligibility potential. Thirteen have been determined eligible (refer to Chapter 3 of the EIS). To be eligible, a river (or some portion of it) must meet criteria of the WSRA, as supplemented by the "Final Revised Guidelines for Eligibility, Classification and Management of River Areas,' September 7,1982. It must be primarily free4lowing and possess one or more 'outstandingly remarkable' values. Refer to Appendix E of the EIS for a detailed description of the Forest's WSR eligibility determinations and suitability analysis.

Forest Plan

Detailed final boundaries for each of the designated rivers were established in the Forest Plan process (refer to Appendix J in the EIS).

The Forest Plan would recommend reclassification of a ½ mile segment of the North Fork Salmon River from Wild to Recreational to allow the construction of a dispersed camping area and picnic sites at the trailhead.

The Forest Plan recommends 171.3 river miles as additions to the National WSR System. Recommendations include 101.1 miles with a Wild classification, 10.6 miles with a Scenic classification and 59.6 miles with a Recreational classification.

Specially Designated Area Management

Research Natural Areas

Research Natural Areas (RNAS) are part of a National network of reserved areas on public lands, representing a diversity of North American ecosystems. These areas provide opportunities for research and ecological study.

A Regional program has identified major types of forest vegetation that should be represented in the National RNA network. Currently, there are no established RNAs on the Forest. Thirteen areas, representing various elements, have been evaluated as candidates for RNA status by the Forest. Four have been dropped from consideration by the Regional RNA Committee. The remaining 9 have been recommended by the Committee and the Regional Forester for establishment.

The 9 candidate RNAs include: Crater Creek, Sugar Creek, Marble Caves, Limestone Bluffs, Antelope Creek Lakes, Stove Spring Canyon, Bridge Creek, Haypress Meadows and Rock Creek Butte. Refer to Chapter 3 of the EIS for descriptions.

Forest Plan

The Forest Plan will continue the establishment process for all 9 candidate RNAS. All candidate RNAs will be managed by the RNA standards and guidelines in Management Area 1. Standards and guidelines permit very few activities.

Special Interest Areas

Areas that pose outstanding or especially interesting natural, scenic or cultural features may be highlighted and managed as special interest areas (SIAs). The goal is to interpret the surroundings for public enjoyment and increased understanding of natural resources compatible with the values for which they were established. SIAs can be established to highlight areas with botanical, geologic, scenic, historic, zoological, paleontological or other special values.

Scenic areas are recommended for exceptional views of a variety of landforms and vegetation. Botanical areas are recommended for outstanding examples of some part of the Forest flora. Geological areas are recommended for unique or outstanding features that demonstrate the earth's development and processes.

The Medicine Lake Glass Flow was established as a Geological SIA by the Modoc National Forest and about 30 acres are within the Klamath National Forest boundary. No other SIAs have been designated on the Forest. Four areas, currently in the nomination process, are being managed as SIAs. These candidate Botanical SIAs are Little Shasta Meadow, Lake Mountain Foxtail Pine, Seiad Baker Cypress and Indian Creek Brewer Spruce.

The following SIAs have been proposed (refer to Chapter 3 of the EIS for a brief description of each proposed SIA).

Scenic Areas - Siskiyou Crest Zone Scenic Area.

Botanical and Geologic Areas - Black Lava Butte and Callahan Lava Flow, China Mountain, Cook and Green Pass, Cory Peak, Kangaroo Lake, and Preston Peak.

Botanical Areas - Bear Peak, Digger Pine, Duck Lake, Elk Hole, Horse Creek, Indian Creek Brewer Spruce, Lake Mountain Foxtail Pine, Little Shasta Meadow, Mt. Ashland-Siskiyou Peak, Observation Peak, Poker Flat, Red Mountain, Rhododendron Patch, Rock Fence Creek, Scott Mountain, Seiad Baker Cypress, Sutcliffe Creek and White Mountain.

Geologic Areas - Antelope Sink, Ash Creek Butte Rock Glacier, Bloomer Debris Avalanche, Cabin Meadow Creek Pillow Lava, Caesar Peak Perennial Icefield, Callahan Lava Flow, Cement Banks, Coffee Creek Stream Capture, Condrey Mountain Blueschist, Condrey Mountain Schist Type Section, Deer Creek Landslide, Elk Lick, Fourmile Hill Tree Molds, Hole in the Ground, Little Glass Mountain, Little Grider Debris Avalanche, McCash Creek Debris Avalanche, Murderers Bar Landslide, North Russian Landslide Dam, Pumice Craters, Rainbow Mountain, Scorpion Caves, Spees Peak Debris Avalanche, Sulfur Spring, West Fork Waterfall and Landslide, Whitney Creek Volcanic Mudflow and Wooley Creek Batholiths Roof Zone.

Forest Plan

The Forest Plan will recommend all 6 of the Botanical and Geologic candidate SlAs, 18 of the Botanical candidates and 21 of the Geologic candidates for designation as SlAs. These areas will provide recreational and educational opportunities.

Butte Valley National Grassland

The Butte Valley National Grassland (BVNG) was designated by the Secretary of Agriculture on February 28, 1991. It consists of 18,400 acres of Federal land, located near the eastside of the Forest. Before designation, the area was managed by the Forest as the Butte Valley Land Use Project.

The objectives for managing the BVNG are:

1) To promote the development of the grassland, agriculture and sustained yield management of the soil, water, forage, fish and wildlife resources.

2) To demonstrate sound and practical principles of land-use to favorable influence nearby areas and economies.

3) To encourage user groups to assist in administration of the BVNG, and

4) To demonstrate management flexibility and innovation in the design and implementation of resource management activities on the BVNG that will promote improvement in resource management on similar lands in other ownership.

The BVNG provides habitat for a variety of wildlife species including bald eagles, golden eagles, prairie falcons, Swainson's hawk, burrowing owl and pronghorn. Since much of the private land surrounding the BVNG has been converted from a big sage-juniper type to irrigated alfalfa fields, these species rely heavily on the BVNG for forage, resting, nesting, thermal cover and hiding cover.

Forest Plan

The Forest Plan will maintain and restore the ecological health of the grassland and wetland ecosystems in the BVNG. Wildlife habitat and forage improvement will be emphasized.

Lands Program Management

Landownership

The Forest manages about 1,680,000 acres of NFS land. In addition, there are over 200,000 acres of land within the Forest boundaries that are in other ownership. Most of the private land is in a 'checkerboard' pattern (every other section in private ownership) across Oak Knoll, Scott River and Goosenest Ranger Districts. This checkerboard pattern resulted from the railroad land grants of the late 1800s. Most of the remaining private land resulted from homestead patents and mining patents.

The landownership adjustment program involves changes in ownership to facilitate management, achieve management goals and to reduce administrative costs. Land exchange is the method most often used to adjust ownership patterns. Under the current program, an average of 3 to 5 exchanges are handled each year. Other methods include donations, purchases and sales. However, Forest Service authority to sell public land is very limited.

Property Boundary Location and Encroachments

The property boundary location program supports the resource programs and the landownership adjustment program. The location of property boundaries can lead to the discovery of encroachments on public land. Under current Forest direction, the goal is to resolve all identified innocent encroachment by the year 2020. Legal proceedings may be necessary to resolve willful trespass on public land.

Special Uses

The Forest can authorize use of NFS land through special use authorizations, easements, leases, contracts and plans of operations. (Refer to Chapter 3 of the EIS for further information).

There are currently 3 existing, occupied, utility corridors on the Westside and 2 on the eastside that cross NFS land. The Western Regional Corridor Study in 1986 identified a potential need to expand these existing corridors. They also identified a potential need for 2 additional corridors on the eastside of the Forest.

Rights-of-Way Acquisition

The Forest acquires easements, permits or licenses across private property, when needed, to access NFS land for management activities and to provide public access.

Withdrawals

The Wilderness Act of 1964 and the California Wilderness Act of 1984 withdrew all wilderness on the Forest from all forms of appropriation under the mining laws. These also withdrew wilderness from disposition under all laws pertaining to mineral leasing, subject to valid existing rights. The WSRA does the same for designated WSR corridors classified as Wild, and for any future designations of Wild Rivers.

Thirty-four sites, consisting of about 1,500 acres, have been withdrawn from mineral entry. These were withdrawn for use as administrative sites and developed recreation sites through application to the Bureau of Land Management.

Forest Plan

Land ownership adjustments will be pursued when they are clearly in the public interest. Standards and guidelines provide direction for land adjustments, special use authorization and withdrawal from mineral entry. Decisions on utility corridors will occur after a site-specific analysis.

Law Enforcement

It is the policy of all Federal agencies to maintain a fully trained law enforcement force with full discretion in the use of protective equipment, including the defensive use of handguns.

Law enforcement objectives are to assure compliance with laws and regulations, to protect Forest resources and property, and to protect Forest Service employees and the public.

Occupancy trespass, forest products trespass-, production of illegal drugs and the illegal disposal of hazardous waste are the primary unauthorized uses that occur on the Forest.

Forest Plan

Continued use of the law enforcement methods described in Chapter 3 of the EIS will help minimize vandalism, destruction and unauthorized uses on the Forest. Standards and guidelines emphasize a public and employee awareness program as well as cooperation with other agencies in law enforcement efforts.

Minerals Management

The geology of the Forest is quite diverse, containing a variety of mineral deposits. Mineral commodities are classified by law into 3 groups: locatable minerals, leasable minerals and mineral materials.

Locatable Minerals

Locatable minerals may be acquired through compliance with the General Mining Laws of 1872, as amended. Locatable minerals include gold, silver, platinum, chromite, copper and other minerals having unique and special values.

Chromite and copper are found on the Westside of the Forest. Much of the chromite and copper production occurred during wartime.

Leasable Minerals

Leasable minerals are commodities that may be acquired under the Mineral Leasing Act of 1920, as amended. They include oil, gas and geothermal energy. All minerals located on acquired lands, except common variety mineral materials, are also leasable under the Weeks Law Act of 1911, as amended, or the Acquired Lands Act of 1947.

The most significant potential for oil and gas development is on the northern portion of the Goosenest Ranger District. Additional exploration is necessary to determine the extent of the resource.

Mineral Materials

Mineral materials on the Forest are primarily common varieties of rock, gravel, sand, stone and volcanic cinders. These may be disposed of under the Materials Act of 1947, as amended, through a contract of sale.

Mineral Management

The prospecting, location and development of mineral resources within the Forest is authorized by the Organic Act of June 4, 1897. The Act also allows the Secretary of Agriculture to set out rules and regulations to mitigate impacts on the surface resources and to define procedures related to operations authorized by the mining law.

Before starting any operations that might cause disturbance to surface resources, the operator is required to submit a notice of intent to operate to

the district ranger with jurisdiction over the affected area. If the district ranger determines that the proposed operation may cause significant disturbance to the surface resources, a proposed plan of operations will be required. The regulations for reclamation related to locatable mineral activities are found in 36 CFR 228.8.

The BLM, as authorized by the Secretary of the Interior, is responsible for administering the general mining laws on NFS lands. Current Forest Service policy is to encourage and facilitate the exploration and development of mineral and energy resources. Any activities incidental to mineral extraction must be conducted in an environmentally sound manner. Any resulting land disturbance must be reclaimed for other productive uses.

By 1991, about 23% of NFS land on the Forest had been withdrawn from mineral entry (refer to Chapter 3 of the EIS). These withdrawals include designated wilderness, Wild segments of WSR (all within designated wilderness), administrative sites and some developed recreational sites. These withdrawals are subject to valid existing rights.

As of 1990, about 650 acres of land on the Forest had the mineral rights in question or reserved to private parties.

Surface uses are permitted on NFS land, when thought reasonably necessary and required for mineral exploration, development and production. The most controversial surface-use is residential occupancy. A determination of the need for residential occupancy considers what is reasonable in the local area.

Projected Demands

The potential for locatable mineral development was mapped in 1980 and updated in 1984. Development potential has been divided into 3 categories. Refer to Chapter 3 of the EIS for descriptions. Future demand is difficult to predict, as ft is dependent on market value and the National and world-wide supply of locatable minerals.

Forest Plan

Exploration and development for mineral resources will be managed to maintain the environmental quality of the surface resources.

Transportation and Facilities Management

Current Forest facilities include the transportation system and other facilities, such as dams and administrative sites (for example, buildings). The transportation system provides public access and facilitates for Forest use and management activities, such as recreation, mining, law enforcement, timber production, and fire prevention and suppression. Ranger stations, work stations, lookouts, electronic sites, etc., represent the 'other facilities" used for Forest administration and management activities.

The total Forest road system includes over 6,000 miles of road. Included are Forest development roads, County roads and State roads. Forest development roads are constructed for the administration of NFS lands and are not classified as public roads.

However, public use is allowed by the Secretary of Agriculture. This system is currently maintained and reconstructed as use and conditions dictate, within available budgets. According to present inventory, the development road density on the Forest averages about 3.3 miles per square mile.

A large portion of the Forest administrative facilities are old and many need repair or replacement. Leased facilities represent a relatively small portion of the Forest's administrative sites. These facilities, because of their high annual cost, have a disproportionate effect on the Forest's fiscal management.

Forest Development Roads

Forest development roads currently total 5,100 miles of the total road system. These roads are categorized into 3 functional classes: arterial, collector and local. Traffic management strategies have been established to minimize resource-use conflicts. These conflicts may include special wildlife considerations, or erosion related water quality concerns. Refer to Chapter 3 of the EIS for miles of roads by functional class and traffic strategy.

Forest Highways

Forest highways are specially designated roads that qualify for funding under the Federal Lands Highway program. There are 4 of these on the Forest (refer to Chapter 3 of the EIS).

Road Maintenance

Road maintenance on the Forest is accomplished in several ways. It is done through timber sale contract requirements, Forest Service crews, service-contracts or cooperative-agreement maintenance.

Road maintenance budgets have been steadily declining in pro portion to total system needs as a result of inflation. Consequently, available funding must be used for preventing or repairing damage to prevent road use or damage that might pose a serious threat to other resources. As a

result, the road system is steadily deteriorating. Eventually, substantial investments will be necessary to return Forest system roads to a condition where they can function as originally intended.

Forest development roads are grouped into 5 maintenance levels. Most of the Forest road system (over 70%) is maintained at Level 1 or 2. This means that less than 30% of the road system is maintained for standard passenger car traffic.

Other Facilities (Buildings, Utility Systems and Dams)

The Forest leases and operates 6 administrative sites. These include the Salmon River, Scott River, Oak Knoll, Happy Camp and Goosenest Ranger District offices and the Supervisor's Office in Yreka. The Ukonom Ranger Station is co-located with the Orleans Station on the Six Rivers National Forest.

The Forest uses about 288 buildings and related facilities that support various administrative and management activities. These include offices, shops, warehouses, residences, barracks and equipment shelters. Total value of these structures is about $17 million.

Forest Plan

Road management objectives will be reviewed for existing roads and will be proposed for new roads through analyses at the landscape/watershed and site levels. There will be no net increase in road miles within Key Watersheds which comprise about 41**%** of the Forest. There will be no road construction in roadless areas in Key Watersheds. Less new road construction will occur than in the past.

Timber Management

The Forest is comprised of 7 major forest types. These types are distinguishable by the primary conifer species present and average site productivity (refer to Chapter 3 of the EIS). The 7 forest types are Douglas fir, Westside mixed conifer, eastside mixed conifer, true fir, ponderosa pine, lodgepole pine and hardwood.

The conifer species, Pacific yew *(Taxus breviflora),* exists as a minor component within forest stands on the Forest. This species has received National attention because ft contains a cancer-fighting substance known as taxol (refer to the section on Other Forest Products/Biomass Utilization in the Timber Management section of Chapter 3 of the EIS).

A nominal amount of Port-Orford-cedar is also found on the Happy Camp and Ukonom Ranger Districts. It is being carefully monitored for a root disease that kills this commercially valuable species.

About 97,700 acres, or 6%, of the Forest is nonproductive forest land. This land is comprised of noncommercial conifer species (like knobcone pine, digger pine, etc.) or hardwoods. The remaining 178,100 acres (11%) of the Forest is non-forested (water, rock, urban areas, natural grasslands and brushlands) and incapable of growing conifers.

The primary direction for timber management is provided in the Klamath National Forest Timber Management Plan and EIS signed September 30, 1974. This plan was amended in 1979 to reflect RARE I & II wilderness recommendations. It was amended again in 1985 to reflect the 1984 California Wilderness Act. This plan set an annual potential timber yield for the Forest, based on a timber inventory done in the 1960s.

Lands allocated to Timber Management

(Capable, Available, Suitable [CAS])

NFMA requires forests to do an assessment of lands that are capable, available and tentatively suitable for timber production. **Capable** lands are defined by the Pacific Southwest Regional Land Management Planning Direction as land where at least 20 cubic feet of commercial wood products can be grown per acre per year. Of the 1,680,000 acres of NFS lands on the Forest, about 1,486,000 acres (88%) are classified as capable.

Available land is defined as lands administratively available for timber management. Wilderness is considered unavailable and has been removed from the timber land base.

Suitable land is defined as land where timber harvest activities could occur without causing irreversible damage to soil or watershed. Active landslide areas, slumps and unstable inner gorge slopes are classified as unsuitable. These areas are also removed from the timber land base. (A more in-depth description of these lands is included in Chapter 3 of the EIS).

Included in these forest lands are about 80,000 acres of non-stocked land and over 320,000 acres of under-stocked land. These lands are capable of growing commercial conifer forests. Under-stocked lands are a product of wildfires and past management practices, particularly selective harvesting.

Timber Management Intensity

Timber management objectives in the current plan direct the Forest to provide a maximum supply of wood products on regulated commercial forest land consistent with other resource values. Today,

several of the assumptions on which the potential yield calculations of the current plan were based have changed.

Silvicultural Systems

Even-aged harvest methods include clearcut, seedtree, shelterwood, overstory removal and various intermediate treatments (including thinning, sanitation and salvage). Recently, in response to public and other resource concerns, these traditional even-aged silvicultural methods have been modified to provide for additional resource values.

The Forest Service is following a new approach called "Ecosystem Management," which blends multiple-use goals and expands silvicultural options over landscape and Regional scales. These silvicultural options emphasize maintaining the structural diversity by retaining green trees, snags and large down logs after harvest. Historically, the use of uneven-aged harvest methods, including both individual tree selection and group removal harvesting, has been limited on the Forest.

Experience and silvicultural literature support the selection of even-aged system as the preferred silvicultural system for commercial forest types in this area. Even-aged cutting methods are economically and operationally more efficient than uneven-aged methods. They allow for greater monetary returns per acre and require lower administrative costs.

On Standard Component lands, the Timber Management Plan prescribes even-aged management with a "rotation age" (age to which managed stands would be grown) of 140 years. Most regeneration harvests have been clearcuts. Recent emphasis has changed from clearcutting to green tree retention (GTR). Current practices keep a range of green trees after harvest for structural diversity. These trees may be clumped together or evenly distributed throughout the unit.

The Timber Management Plan provided direction to maximize timber yields on a sustained yield basis by regulating the forest. The objective of a regulated forest is to create a mosaic of even-aged stands, ranging in age from newly planted to 140 years of age.

Commercial thinnings were planned in these stands, beginning at merchantable size (average about 50 years). Thinnings would occur every 10 to 20 years until final harvest. These new stands were generally 10 to 20 acres in size (the maximum was set at 40 acres, except the Douglas-fir type where the limit was 60 acres without approval of the Regional Forester). A variety of conifer species, reflective of the mixture found on the site are used for reforestation.

On Special and Marginal Component lands where resource objectives often preclude even-aged management and the intensity of timber management is less, uneven-aged harvest methods have been used. Where appropriate, even-aged methods have also been used, but rotation lengths were extended beyond 140 years. These lands are comprised of the same variety of tree species found on Standard Component lands. However, vegetative diversity is less due to the relative absence of the young seral stages, dominated by shrubs, forbs and grasses.

A variety of site preparation treatments, including burning, mechanical and hand treatments, are used on the Forest to prepare harvested areas for regeneration. The amount of snags and CWD left in regenerated areas varies depending on the method of site preparation and the management objectives.

NFMA requires plantations to be successfully stocked within 5 years of final harvest. Reforestation failures are infrequent on the Forest, especially if all silvicultural techniques are available.

Logging operations on the Forest use a variety of logging systems, including tractor, cable and helicopter systems. Cable logging is the most prevalent system used on the Forest. Tractor yarding, which is limited to slopes less than 35%, is most common on the eastside of the Forest. Helicopter systems are used in areas inaccessible by roads or where resource concerns limit road building or other ground yarding systems.

Allowable Sale Quantity (ASQ, Inventory and Forest Growth)

The programmed annual timber sale volume is determined by the Timber Management Plan (as amended) to reflect lands deferred under RARE II and those reserved by the California Wilderness Bill of 1984. The average annual volume harvested from 1979 through 1989 was about 200 million board feet (MMBF).

Actual sale program levels have varied, depending upon budget and other constraints. Refer to Chapter 3 of the EIS for the amount of timber offered, sold and cut and the total receipts for each year since 1978.

According to the 1989 and 1990 inventories, the Forest has about 17.1 billion board feet of standing timber on lands classified as tentatively suitable for timber production. In addition, there are 170,900 acres (16% of the total tentative suitable landbase) in conifer plantations between the ages of 0 and 40 years. Refer to Chapter 3 of the EIS for the current

situation for the timber resources on the Forest, including inventory volumes, suitable acres and growth for each timber strata. Most of the stands on the Forest are not growing at optimal levels for timber production. Conifer stocking in most of the forest stands is less than the potential for the site. These stands are growing at a rate far less than the site's capability and are not fully utilizing site potential for timber production. Conifer yields also can be affected by the occurrence of insect and disease problems that affect conifer growth and survival. Maintenance of stand vigor is the best preventive measure to protect trees from insect and disease attack.

Pest Management and Forest Health

The interaction of plants with insects, diseases, animals and other plants can influence the growth and development of forest vegetation. Where these interactions result in an undesirable loss of vegetative vigor or mortality, the damaging organisms are considered forest pests.

The Forest continues to implement an integrated pest management approach to reduce or maintain pest damage at acceptable levels. The selection of particular pest management methods are based on biological effectiveness, economic efficiency and the effects on all resources.

Treating competing vegetation in plantations is a significant part of the Forest pest management program. Successful control of this competing vegetation helps insure conifer survival, maintain a healthy stand and provide growth rates needed to sustain a high level of conifer growth and yield.

Release and thinning treatments are normally accomplished by manual, mechanical, livestock or chemical methods. In February 1989, an EIS for Vegetation Management for Reforestation was completed and signed by the Regional Forester. A variety of techniques, including herbicides, are available for controlling competing vegetation. Direction in the EIS allows the application of herbicides only where its use is essential to achieve land management objectives for the site.

Other Forest Products/ Biomass Utilization

Forest lands offer a variety of forest products. These include, but are not limited to timber, firewood, biomass for energy production, Christmas trees, florist and basket-making materials, mushrooms, acorns and vegetation used for medicinal purposes. Management policies and practices on these forested lands can affect the availability and utilization of these products.

Markets for both hardwoods and non-merchantable conifer logs, for uses other than firewood, currently exist in the areas of Medford, Redding, Eureka and east of the Forest in Burney. In response to the recent interest in utilizing these other wood products, an increasing number of Forest projects are being proposed and implemented to meet this demand. Although large quantities of hardwoods are present on the Forest, most is located on steep slopes with long hauling distances to mills. As a result, the demand for hardwoods for commercial purposes has been variable from year to year, depending on the market conditions.

The importance of Pacific yew for a source of taxol has become a National concern within the past few years. An inter-regional planning effort is underway to facilitate the collection of Pacific yew and maintain viable, genetically diverse populations where yew occurs (Washington, Oregon, California, Idaho and Montana). Although yew trees are relatively scarce and small in size on the Forest, current management guidelines restrict the harvest of Pacific yew until conservation and management guidelines are approved.

Projected Demand

The Forest has been among the major timber producing forests in California. The Klamath, Shasta-Trinity, Six Rivers and Plumas National Forests have accounted for about one-half of the potential yield and timber sale volume from the all the National Forests in California.

Demand for timber is relatively high, since mill capacity exceeds the Forest's annual sell volume. This leads to highly competitive bidding on most sales. Demand for the Forest's wood products is expected to increase.

Forest Plan

The Forest Plan ASQ is 51 million board feet (MMBF) in the first decade. In addition, an estimated unscheduled volume of 20 MMBF is anticipated each year from unregulated land to help maintain ecosystem health; prescriptions will likely include salvage and thinning. The genetic tree improvement program will be used to improve forest health and growth. Salvage will be emphasized. The Rural Development Program will encourage the development of new markets for biomass and other forest products.

In areas where timber growth and yields are not emphasized, silvicultural prescriptions will be used to create desired forest conditions to enhance other resource objectives.

Fire Management

Fire has been a dominant force on the Forest in shaping vegetative patterns, in natural

regeneration, in arresting succession and in controlling stand density and stocking levels. Forest inventory data suggests an average high intensity, stand-replacing fire frequency of less than 200 years in all forest types. The eastside frequency seems to be 80 to 140 years, while the Westside is 110 to 180 years.

Evidence of low intensity fires is showing up as frequently as 8 to 12 years in some Westside vegetation types. High intensity fires replace stands (except for occasional fire-surviving dominants) and eliminate most of the accumulated downed, woody material.

Lightning is the most common source of wildfire starts on the Forest. It has accounted for nearly 75% of the starts and 95% of the total area burned. Large fires can be attributed to a relatively high number of ground strikes during lightning storms, coupled with dry fuels on a steep, rugged forest terrain. Lightning is an uncontrollable source of ignition.

Fire Behavior and Suppression

The 3 factors that determine how, when and where a fire burns are topography, weather and fuels.

High intensity wildfires are not uncommon on the Forest. A major contributing factor is the steep terrain and deeply incised canyons of the Forest's Westside. These steep slopes accelerate fire spread and hinder fire control activities.

Rapid effective control of wildfires through active fire suppression efforts over the last several decades h resulted in an accumulation of down woody materiel and other organic debris in forested stands.

Fuels Treatment and Utilization

Prescribed fire is the primary too[used to reduce management-related fuels. The Forest uses slash treatment requirements in timber sale and some pre-commercial thinning contracts to reduce accumulated fuels. However, several factors have contributed to a build-up of forest fuels over the past few decades: (1) effective fire prevention and suppression practices (2) unusable material (cull logs, branches, etc.) and (3) slash left from pre-commercial thinning.

Another way of reducing fuels is using them to generate more useful energy, such as fuel for power plants. Currently, their primary use as a source of energy is for firewood to heat homes. However, use in wood-fueled, electrical power plants is increasing.

Management Direction

Under current Forest management direction, all fires on the Forest are suppressed fully, using the most appropriate suppression response. A centralized automatic dispatch system in Yreka is used to dispatch all resources.

Current Resources

In 1987, the primary Forest initial attack resources included 14 wildland fire engines, 2 helicopters and 5 hand crews. The Forest also maintains an air-attack craft and an airtanker reload base.

Each year, from 5,000 to 6,000 timber management acres on the Forest are treated for fuel reduction. This represents about one-third of the acreage being actively managed for timber. Timber sales generate the funding to treat these fuels. Brush disposal funds are used to reduce sale-generated fire hazards. When fire is prescribed to benefit other resource management purposes (for example, wildlife habitat and watershed improvement), their funding sources are used.

Projected Demand

The fires of 1977 and 1987 created large stands of trees with similar age classes. This equates to large, continuous brush-like fuel components. The Forest will have to contend with this for at least another 30 years. Areas where fuels are treated or minimally treated will become increasingly susceptible to high intensity, stand-replacing fires.

Large high intensity fires will continue to occur at least every 1 0 years, based on fire history for the past 60 to 1 00 years. The fuel accumulations experienced now and into the future will be an important factor. Initial attack forces will have more difficulty fighting fires with heavier fuel loadings. These fires will become large more quickly and have higher intensities.

Thinning slash from plantations will be a major fire hazard. This intermediate timber management activity occurs with minimal or no hazard reduction. As these areas proliferate in high risk areas, more frequent high intensity fires can be expected.

Regional and National demands for fire-fighting resources could keep initial attack resources for the Forest at less than optimal levels.

The days that are available to burn slash or for other management-desired uses of fire are limited. Pressures limiting this availability come from extended fire seasons, requiring the use of personnel that otherwise could be used for burning. Other pressures are the air restrictions from the State, reduced budgets and a smaller workforce. These limitations will limit the number of acres that can be treated with fire.

Forest Plan

The Forest Plan will request monies to increase the size of the fire suppression organization. An aggressive Fuel Management Program treating about 27,000 acres per year will reduce fuels with the intent that future fires will be less intense and less destructive. A primary objective of the Fuel Management Program is to allow fire to play its regulating role in the ecosystem. Prescribed fire and PNF will be emphasized. PNF will be used in wilderness, the larger LSRs and in Backcountry.

Range Management

Rangelands on the Forest provide a variety of forage and habitats for grazing livestock and wildlife. Many ranchers depend on grazing allotments to provide forage for their stock seasonally.

The Forest produces about 34,000 Animal Unit Months (AUMS) of livestock forage annually. An AUM is the amount of forage (1,200 pounds) a mature cow and calf consume over a 30-day period. This production comes from 60 range allotments, made up of NFS land and "waived" private land. The 70 permittees now using these range allotments depend on forage from public land to varying degrees. Livestock grazing on public land (primarily National Forest, with some BLM) accounts for 25% of the seasonal grazing in Siskiyou County.

On some allotments on the Forest, primarily on the eastside, intensive range management strategies have been used. These strategies use range management technology to achieve objectives. Vegetation manipulation and grazing strategies that optimize forage resource use, as well as fencing and water developments, are employed.

Westside rangelands consist primarily of mountain meadows that are subalpine or interspersed with commercial timberland, as well as shrub types and some oak woodland and annual grasslands. Transitory range accounts for about 14% of the forage base at any given time. Range management on the Westside is more extensive. Permitted livestock are released onto grazing allotments and allowed to drift, or they are periodically pushed into areas of forage production. Improvements (structural and non-structural are minimal.

The best available Forest data, compiled in the early 1980s, indicate that 52% of the Forest rangeland is in satisfactory condition or better. 62% of the rangeland is in a static or upward trend. Satisfactory condition rangeland includes those lands (1) in fair condition with an upward trend, (2) good condition rangeland with a static or upward trend and (3) excellent condition rangeland with a static trend. Any rangeland in a downward trend is unsatisfactory. Other rangelands that are unsatisfactory are (1) lands in fair condition with a static trend, (2) poor condition rangeland with an

upward or static trend and (3) very poor condition rangeland with and upward or static trend. The Forest is collecting ecological data for rangeland ecological types.

This information is not yet available on a Forest-wide basis. This information will change the way vegetative c condition and trend are measured and described in the future. Refer to Chapter 3 of the EIS for further information including a description of meadow and riparian communities in wilderness.

Projected Demand

Major concern exists over the effects of grazing on riparian areas. Few studies have measured the impacts of grazing on the Forest's riparian areas and ecological integrity.

Conflicts with timber management activities exist on the eastside, where timber harvest and intensive forestry practices may reduce forage quality for livestock and wildlife.

There will be an increasing demand for the Forest's range program to be more responsive to changing resource values. Future management will be directed toward a desired ecological status by ecological type as more data is collected in this format.

Forest Plan

The Forest Plan will produce the same number of AUMs as in the past. More stringent requirements for riparian areas are expected to be off-set by more intensive grazing strategies which would be implemented primarily by permittees. Land allocations with clearly stated goals and desired future conditions as well as standards and guidelines are expected to reduce conflicts between livestock and other resources. Identification of utilization standards will help maintain rangeland ecosystem health.

Wild Horse Management

Information dealing with wild horses on the Forest is limited and subject to considerable interpretation. Historically, many domestic horses escaped or were released by ranchers, miners and soldiers. Local sources indicate that horses have been common throughout the area in the past.

There are currently 2 wild horse herds found on the Forest, the Three Sisters Herd and the McGavin Peak Herd. All other herds were eliminated during the 1950s and 1960s. The information available on population parameters and actual herd area boundaries are the result of biannual census and observations, started in 1971. The intent of the Wild Horse and Burro Act is to provide for the protection of wild horses and burros. This act also insures that the populations would be managed in a manner consistent with multiple-use management concepts and as a symbol of the old west.

McGavin Peak Wild Horse Herd

Current population estimates for the McGavin Peak herd, range from 18 to 50 head. A 1986 survey confirmed 26 adults and 4 foals. In 1987, 36 animals were observed. Based on biannual herd sightings, the annual foal production has been estimated from 10 to 20% per year.

The McGavin Peak herd currently ranges over about 16,000 acres. Of these lands, 11% are managed by the BLM, 24% by the Forest Service and 65% are privately owned. The home range for this herd was determined in the 1974 herd management plan. Current observations indicate that the home range is expanding outside the original boundary.

Three Sisters Wild Horse Herd

The Three Sisters herd population is currently estimated at 24 head. Recently, the population appears to be increasing. This may be due to speculation increases, or interactions with horses off the Modoc National Forest. The herd is estimated to increase from 10 to 20% per year.

The anticipated territory is about 26,000 acres in size. Most of this territory is on Federal lands. In 1985, 18 head of horses were sighted in an area thought to be outside the herd territory.

Projected Demands

Currently, forage demands of the herds appear to be very low. Additional forage may be necessary to support more horses ff the herds expand. Current information is available to support an upward population trend.

Forest Plan

The intent of the Forest Plan is to maintain 1 herd of about 15 head in the Three Sisters Area. This population could be sustained in balance with the ecosystem.

Cultural Resources Management

The Forest has a rich cultural heritage. There is evidence that Native American use of this area began over 8,000 years ago. This use continues today for contemporary Shasta and Karuk people. Native Americans (mainly Karuk) still use certain Forest sites and many of its resources. These include sacred areas used in maintaining their traditional culture.

Cultural Resource Inventory

The diversity of cultural resources on the Forest, coupled with the presence of contemporary Native American peoples, require a multi-disciplinary approach to the task of data collection. These resources fall into 2 major types: sites and activity areas. Refer to Chapter 3 of the EIS for more information.

Significance Determination and Coordination

Management of cultural sites includes significance determination as well as preservation aspects. Where sites are found to lack significance, no further cultural resource management is necessary. Significant sites, identified by this process, will have a representative sample nominated to the National Register of Historic Places. To preserve nominated sites, a management plan will be developed.

As part of the present Heritage Resource Program, local Native American tribes and the State Historic Preservation Office (SHPO) are consulted on Forest project proposals requiring environmental analysis.

Program and Data Deficiencies

The major deficiency in the cultural resource database is that R does not represent the entire Forest land base. Nearly all data collection has come from areas that have been considered for timber harvest. In 18 years of active cultural resource management on the Forest, 40% has been surveyed. A broader, more balanced program could correct present database shortcomings.

Site inventory and protection continues. To date, 910 historic sites and 434 prehistoric sites have been identified. Most of these have been protected by avoidance. Due to time, budget and staffing limitations, very few recorded sites have been evaluated for National Register eligibility.

Projected Demands

To be responsive to the desires of local Indians and meet the intent of the law, the Forest's cultural resources program must evolve beyond its current project dependent state.

Forest Plan

The Forest Plan designates Inam, Cottimien and Helkau as Cultural Sites, Management Area 8, to protect ceremonial values. Any management activities will be closely coordinated with the Karuk Tribe. Standards and guidelines will provide for identification, evaluation, protection and interpretation of cultural sites throughout the Forest.

Social and Economic Environment

Social

The 3 main issues that define the social climate are: (1) protection of the environment, (2) stability of the economy and (3) protection of contemporary Native American cultural activities and values.

The main area of influence of the Forest takes in the 7 surrounding counties. Siskiyou County is the most directly affected. The other counties are Shasta, Humboldt and Del Norte Counties in California, and Jackson, Josephine and Klamath Counties in Oregon. These counties have been identified as the Forest's primary sphere of socioeconomic influence.

Many different lifestyles exist within the 7-county area. Residents range from Native Americans to retirees (refer to Social Groups and Lifestyles below). Yet they have one thing in common - their lifestyles are intrinsically linked to the land and natural resources.

Affected Population

Total population within the Forest's area of influence is about 600,000 (refer to Chapter 3 of the EIS). Only 4 large population centers (Medford, Klamath Falls, Redding and Eureka) are within 100 miles of the Forest boundaries. During the 1970s and 1980s, this area experienced accelerated growth by in-migration. This can be attributed to people moving from urban areas to less-populated rural areas.

Social Groups and Lifestyles

A wide range of social groups live in the Forest's area of influence. Four major groups have been identified within the social structure of the 7-county area: long-term residents, new rural, destination recreationists and Native Americans. These 4 groups (described in Chapter 3 of the EIS) are not mutually exclusive (for example, individuals may be included in more than one group).

Projected Demands

The entire spectrum of public issues, demands and management opportunities surrounding the development of a forest plan relate to the social groups within the human environment. This includes the management of all Forest commodity and amenity values. The management strategy adopted in the Forest Plan has the potential to impact the local economy, community lifestyles, stability/cohesion and cultural values, along with the values of the Forest visitor.

Chapter 3 - Summary of the AMS

Rural Development

Rural development is the management of human, natural, technical and financial resources needed to improve living conditions, provide employment opportunities, enrich the cultural life and enhance the environment of rural America. In the Forest Service, rural development is accomplished through partnerships. This program was established by the "National Forest Dependent Rural Communities Economic Diversification Act of 1990."

The Forest is currently working with Siskiyou County and neighboring communities on developing natural resource based opportunities and enterprises. These will contribute to the economic and social well-being of the community.

Human Resource

The Forest has been involved in several human resource training and employment programs in recent years. The Forest Service has the authority to carry out programs under the umbrella of Human Resource Programs. These programs are designed to provide human and natural resource benefits by administering and hosting programs in work, training and education for youths, the unemployed, the under employed, the elderly and others with special needs.

Forest Plan

The Forest Plan emphasizes the Rural Development Program as a means to off-set the adverse effects of a reduced timber program on local communities. Emphasis is on working with local community groups and individuals to identify and remove barriers that prevent economic development. The Human Resource Program is also emphasized.

Economic

The Forest provides a variety of resources to the communities in the area of influence. The area has a high degree of dependence on lumber and wood products manufacturing. This manufacturing accounts for as high as 18% of all wage and salary employment in Klamath County to as low as 5% in Shasta County. About 8% of the 7-county area's harvested volume comes from the Forest.

Agriculture, government, recreation, wildlife activities and Indian tribes also play major roles in the area's economy. The Forest provides important resources, including firewood, livestock forage for grazing permittees, quality water for household and agricultural uses and pleasing recreational settings. Residents, in many area communities, depend on the Forest for employment. Local tribes rely on the Forest for food and ceremonial substances and as

a place of spiritual and cultural experience and history.

About 40% of Siskiyou County's harvested timber volume is from Forest-managed lands. Lumber and wood products manufacturing accounts for 12% of all wage and salary employment in Siskiyou County. Forest employees account for nearly 5% of all wage and salary employment in Siskiyou County. Activities of other Federal agencies, as well as activities of extensive private commercial forest land holders, also have a considerable impact on the structure of the County's economy.

Employment data for the last 5 decades reveal changes in the area's economy (refer to Chapter 3 of the EIS). In 1940, employment in wood product manufacturing and agriculture accounted for 39% of all employment. The most current information shows that these jobs now account for 14% of employment. Services and government accounted for 20% of employment in 1940 and have risen to 400%, mostly due to society's desire for increased health care and improved education.

The 7-county area manufacturing base is dominated by lumber and wood-related industries. In addition, there is a growing “export sector” consisting of retirees (whose income comes from outside the area), non-local tourism and Federal (and some State) operations whose operating money originates in taxes mostly collected outside the area.

Trade, both wholesale and retail, is the number-one job producer in the area. This sector is the heart of the residentiary sector. Generally, when the economy is healthy, trade and services are expanding. The trade sector also brings in money from outside when travelers buy supplies for recreation on the Forest. Trade and services will grow to meet the needs of population expansion and increased disposable income.

Government is a large and growing sector of the economy. It accounts for about one-fifth of area jobs. Nearly two-thirds (or about 1 job in 7) of these are local government and education employment. Increased job opportunities are tied to population growth and a desire for improved education.

Service is a major sector. It responds to increased tourism and wildlife-related activities (for example, hunting and fishing), population growth and increased demand for health care and leisure activities. Federally recognized Indian tribes also provide mufti-million dollar service programs.

The area-wide trends are fairly constant and consistent with the 50 year trends. State employment department economists expect employment growth to show continuing expansion of services-producing industries and contracting of goods-producing industries.

Timber industry jobs are expected to decrease for a variety of reasons. Some reasons include increased mechanization in harvest and production processes and reduced outputs on public and private lands. While other manufacturing employment is projected to increase, the jobs created may not exceed job loss for the wood products subsector.

State of California Employment Development Department analysts forecast a weak decline in goods production with a continued slow growth in trade, services and government. The forces of recession, market instability and environmental concerns are expected to lead to further declines in lumber and wood products employment. Trade and services are expected to generate moderate employment growth. All levels of government will face budget constraints. While population growth will increase demand for local government services (especially education), budget considerations may limit job formation.

Unemployment

Average annual unemployment rates for 1988 range from 12.2% in Del Norte County to 6.5% in Jackson County. Siskiyou County had a 10.5% annual unemployment for 1988. Events outside the authority of the Forest, such as impacts related to the listing of the northern spotted owl, play a large role here. Other factors of employment within Siskiyou County are not growing enough to compensate completely for possible losses.

Projected Demand

National Forest management affects the local economy in several ways:

- A portion of the budget is transferred to the local economy in the form of salaries and purchases.
- National Forest outputs stimulate private-sector firm and individual spending, generating Forest revenues and changes in number of jobs.
- Receipt sharing, yield taxes and payments in lieu of taxes to local counties.

Forest Outputs

The Forest provides several outputs that contribute to the local economy. Many jobs are tied to the Forest by its resource programs. Timber-related activities have the largest economic impact within the area. Next are grazing and special use permits, followed by recreation. In addition, use of other

forest products has been increasing. There is increasing demand that timber outputs be stabilized at historical levels. This demand conflicts with increasing environmental protection demands.

Exploration of value added manufacture and use of other forest products are opportunities to be examined. Opportunities may exist to increase out-of-area spending in the destination recreation area.

Receipt Sharing

Counties within the Forest's area of influence rely, in varying degrees, on revenues from National Forest Fund receipts and Oregon & California land payments from all National Forests in the area. National Forest Fund payments to the 7 counties in 1988 totaled over $59 million. The Forest's National Forest Fund Payments to counties in 1988 amounted to $4.1 million. Of this, 98% was paid to Siskiyou County and the remaining to Jackson County. About 97% of the total receipts for the Forest came from timber stumpage sales. The balance came from range allotment payments, recreation user fees and special use permit fees. The total payment Siskiyou County received in 1988 was $6.7 million.

Receipts have historically tended to increase or decrease as harvest levels or timber values increase or decrease. Receipts are not directly proportional to harvest levels, as changes in the Regional and National markets affect the market value of stumpage. Since 1980, payments have averaged $4.0 million dollars annually on an average annual harvest of 190.4 MMBF.

Payments In Lieu of Taxes

Counties also receive revenue from in-lieu-of-tax fees (disbursed by the BLM) for each acre of Federal land within the county. The current rate for the Forest's land is 1 0 cents per acre, regardless of use.

Yield Tax

Another funding source is yield tax revenue. The current rate is 2.9% of value as estimated by the Tax Board. Yield tax receipts for Siskiyou County have averaged $425,000 annually, calculated on all timber harvested on public and private land.

Forest Plan

The Forest Plan is projected to generate about 2,310 jobs per year. County revenues are estimated at about 4 million dollars per year for National Forest Fund receipts and about 400,000 dollars per year in yield taxes.