CHAPTER II

SUMMARY OF THE ANALYSIS OF THE MANAGEMENT SITUATION

INTRODUCTION

This chapter summarizes resource conditions on the Forest and the Forest's ability to supply significant market and nonmarket goods and services in response to public demands A detailed discussion of resource supply conditions and projected demands can be found in the Analysis of the Management Situation (March 1985) on file at the Fremont National Forest Headquarters.

Chapter II is divided into two sections. The first discusses the current special conditions of the resources of the Forest. These discussions include a general assessment of the supply and demand projections for most of the resources The second section lists information and research needs identified during development of the Plan

RESOURCE CONDITIONS AND SUPPLY AND DEMAND TRENDS

This section discusses the special resource conditions as of March, 1985 that influence the resolution of the issues, management concerns, and resource opportunities. It is presented in two parts The first part discusses the supply and demand conditions of the key resources pertinent to the resolution of the major issues identified in Chapter I of the accompanying EIS. A table summarizing supply conditions and demand projections is presented at the end of the first part. The second part discusses the conditions of the other resources important and relevant to understanding the remaining issues and management concerns but less influential in the resolution of the major issues.

As used in this section of the document, demand is defined as a particular want or need at some point in time. The want or need is assumed to represent a willingness on the part of the Forest user to pay for the desired product or service at that point in time. It should be understood that demand figures are projections. Like any projection, they are expected to be less accurate in the distant future than in the near future.

RESOURCES WITH KEY RELATIONSHIPS TO MAJOR ISSUES

Timber
The timber resource is critical to the resolution of the TIMBER MANAGEMENT issue as well as the LAKEVIEW FEDERAL SUSTAINED YIELD UNIT issue The volume of timber produced by this Plan is of major importance to the resolution of both issues

The Fremont National Forest is predominantly an old-growth forest that experiences losses through fire, disease, and insects. These factors, as well as past management practices, have produced diversity in stand ages, species, and volumes, increasing the complexity of timber management on the Forest. Of the one million-plus Fremont National Forest acres, approximately 68 percent (816,332 acres) is tentatively suitable for industrial wood production. On approximately 265,000 of these tentatively suitable acres, the understory growth is typically healthy and suitable for management to rotation age. Consequently, about 190,000 acres are suitable for uneven-aged management while the remaining

75,000 acres are suitable for a harvest prescription that removes the overstory but delays the final regeneration cut for several decades. Certain areas, because of visual, scientific, or wildlife habitat aspects, are subject to special management considerations that could reduce or eliminate timber harvest on those lands. Refer to Table 1 for a display of the inventory base acres for each working group and for the entire Forest

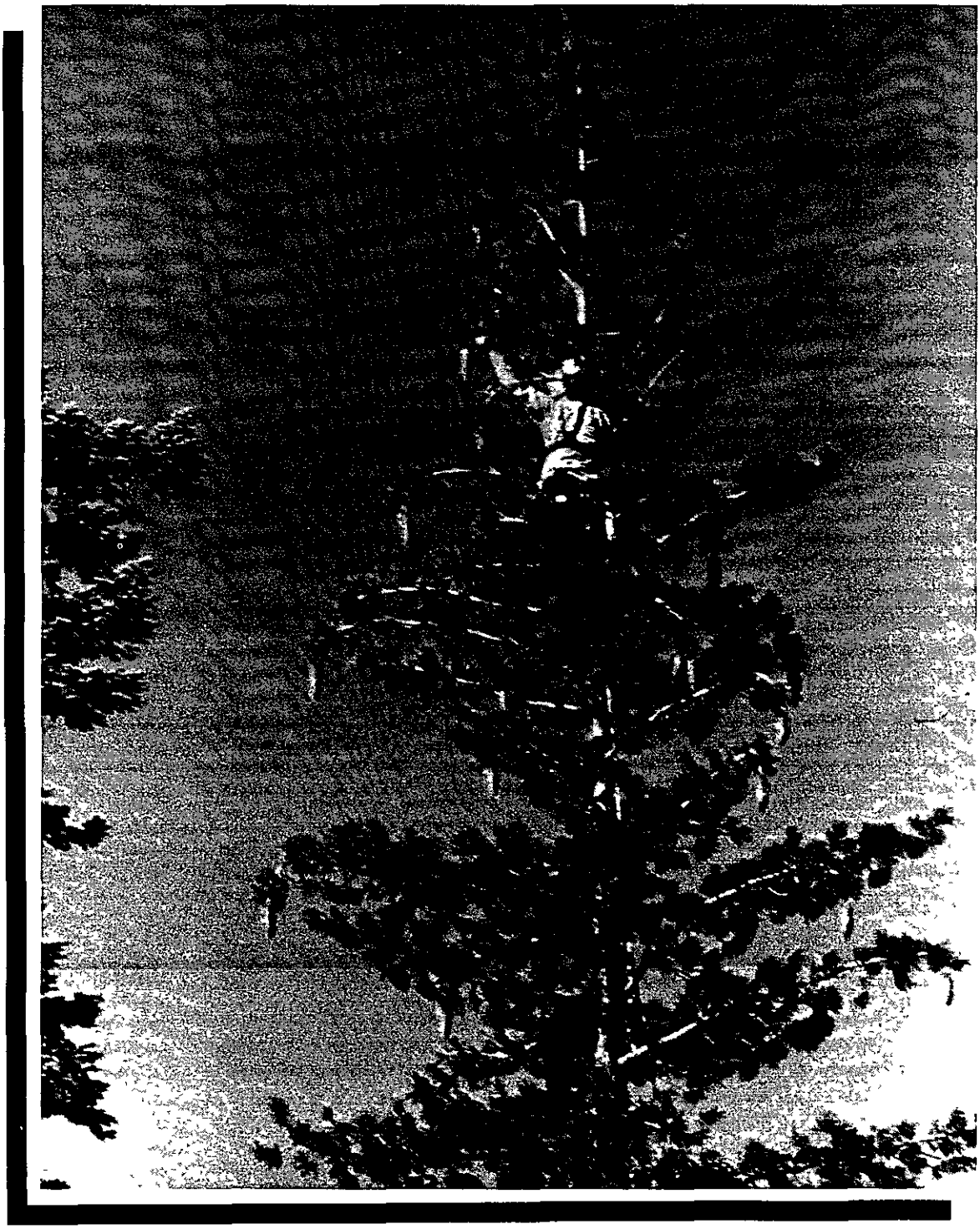


Table 1. Fremont National Forest Update Timber Inventory by Working Group and Condition Class

TENTATIVELY SUITABLE ACRES OF:	KLAMATH BASIN WORKING CIRCLE	LAKEVIEW WORKING CIRCLE	TOTALS
Pine			
Mature/Overmature	166,017	71,494	237,511
Mature/Overmature Overwood	11,894	4,467	16,361
Immature (poles)	16,899	16,022	32,921
Immature (seedlings/saplings)	24,063	9,627	33,690
Unstocked - seedlings	4,006	3,638	7,644
Subtotals for Pine	222,879	105,248	328,127
Pine-Associated			
Mature/Overmature	100,442	134,832	235,274
Mature/Overmature Overwood	10,190	11,947	22,137
Immature (poles)	6,041	14,691	20,732
Immature (seedlings/saplings)	14,932	13,745	28,677
Unstocked - seedlings	3,813	3,493	7,306
Subtotals for Pine-Associated	135,418	178,708	314,126
Lodgepole Pine			
Mature/Overmature	96,470	17,304	113,774
Immature (seedlings/saplings)	13,310	1,682	14,992
Unstocked - seedlings	1,193	0	1,193
Subtotal for Lodgepole Pine	110,973	18,986	129,959
Unsuitable Lands (1)	10,393	8,616	19,009
Nonforested Lands	190,396	148,488	338,884
Wilderness (Reserve - updated through 1984)	15,446	7,377	22,823
Research Natural Areas	1,260	0	1,260
TOTALS	705,666	492,642	1,198,308

(1) Includes Administrative sites, developed recreation sites, powerline corridors, improved roads, railroads, and areas with soil stability problems or reforestation difficulties

timber suitability

The change in the land base available for timber management has been a critical factor affecting the Forest's ability to produce timber The suitability analysis has been of concern as has the ability to reforest harvested lands All lands identified as unsuitable due to reforestation difficulty were carefully reviewed by silviculturists and soil scientists. Determinations were made considering the latest research and technology including ongoing research The reforestation question has been a topic of field reviews

attended by foresters from the timber industry, representatives of environmental organizations, research personnel, and Forest personnel. The observations and discussions have supported the Fremont's analysis as state of the art in reforestation technology.

A total of 61,274 acres have been identified as not cost efficient for timber management. Low Productive lands, only capable of growing less than 20 cubic feet of timber per/acre/year, account for 70 percent of these acres. The remaining 30 percent is capable of growing 20 cubic feet per/acre/year or more.

Low Productive	-	44,120 acres
Other	-	17,154 acres
Total area	-	61,274 acres

The majority of the Low Productive lands (approximately 80 percent) are "desert fringe" ponderosa pine. A typical setting for this condition shows mature trees that are widely spaced, sometimes mixed with juniper and sagebrush, and adjacent to scab rock flats. The remaining Low Productive (20 percent) lands are high elevation, low value lodgepole pine. These situations also typically involve mature trees that are sometimes widely spaced without any other forest floor vegetation on pumice soils. The active growing season in these high elevation areas is generally very short.

Most of the other lands fall within the Timber-Forage and Visual Retention and Visual Partial Retention management emphasis areas. About 50 percent of these lands are within Timber-Forage and 50 percent within the Visual Emphasis areas.

(1) *timber-forage emphasis area*: Most of these lands are in a nonstocked condition class that includes some brush-field areas. These lands do not contain any existing timber volume or value but do require higher regeneration costs prior to establishment of new stands. In addition to the higher regeneration costs, some of these lands are on steep areas that would incur higher logging and road construction costs for future timber stands.

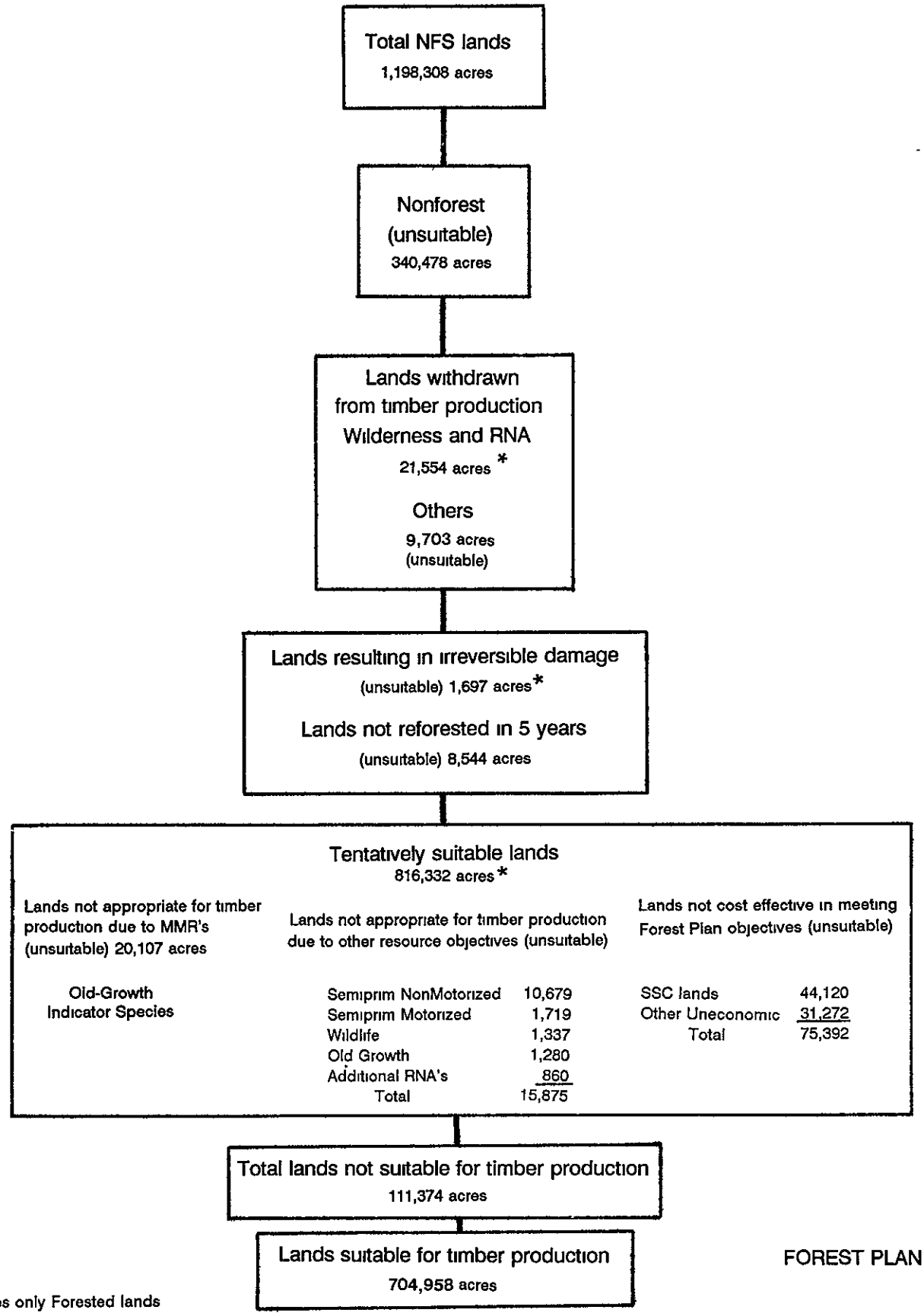
(2) *visual retention & partial retention emphasis areas*: Overmature ponderosa pine and pine-associated working groups predominate the timber stands in these areas. Many of these timber stands are located on capability areas that have higher than average logging and road construction related costs. This includes lands that have soils related problems and lands that are steep.

More restrictive timber prescription intensities (extended rotations etc.) are required to maintain these lands as Visual Emphasis areas.

If demand for timber increases (value increases) and/or related logging and road construction costs decrease during the Plan Period, some of these lands could become cost efficient. A volume increase of up to 2.0 MMBF/year could then be available.

A graphic breakdown of the various suitability categories is presented in the following chart.

Figure 2. Timber Suitability Screen



* Includes only Forested lands

supply and demand

Within the Lakeview Federal Sustained Yield Unit, the 1979 TM Plan called for a programmed harvest volume of 66.5 MMBF. This volume supplied only about 70 percent of the shift capacity within the Unit.* Private holdings and other public lands provide another 10 percent.

The 1982 five-year review of the Unit indicated that local economic stability depends on the timber industry within the Unit. Increased competition for available Unit timber is demonstrated by the rise in overbid percentage starting in 1979-80, when Precision Pine Company (a mill) established itself in the Unit.

The Klamath Basin Working Circle (including the Fremont National Forest portion) supplies about 15 to 20 percent of the raw materials needed to keep Klamath Basin mills operating, with the remaining 80 to 85 percent provided by private lands and other Government agencies. If current management direction continues, a decrease of about 14 percent in the Allowable Sale Quantity (ASQ) is anticipated.

Past timber sale experiences have indicated that demand for *lodgepole pine* is weak. Local mills are not presently equipped to economically harvest, mill, and market this species However, outside concerns have expressed some interest in developing mobile units or special permanent facilities to process large quantities of lodgepole pine. The longer term RPA projections for timber demands and prices indicate that markets should improve as demands grow stronger and prices rise. This potential demand could be met through early conversion of the Forest's overmature lodgepole pine stands. These overmature and overstocked stands have been especially vulnerable to mountain pine beetle infestations. Beetle populations on the Forest have expanded rapidly, causing timber damage and losses in epidemic proportions. Timely conversion (harvesting and restocking) or stocking (density) reduction of infested stands could reduce such losses.

In 1984, 12,400 cords of *fuelwood* were removed from the Forest. Personal use accounted for about 60 percent of this volume, while most of the remaining was cut for commercial fuelwood sales. Of the total number of personal use permits issued by the Forest, roughly half were dispensed from the Lakeview Ranger District and another one-third were issued by the Bly Ranger District. No large increase in fuelwood use for the Lakeview area is expected, as most of the people who want wood for home heating purposes are already making use of the resource. Fuelwood on the Bly Ranger District is not in short supply at this time, but could fall short in the future because of increasing demands from the Klamath Falls area. Fuelwood supplies for the present and the short-range future appear to be adequate on the Paisley and Silver Lake Ranger Districts.

- Although mills in the Unit have the capacity to operate two or three eight-hour shifts, none of them now operate more than one shift Currently, these mills don't have available private or government timber to sustain more shifts. The Lakeview Federal Sustained Yield Unit Policy Statement restricts Unit purchasers from purchasing National Forest timber outside the Unit boundary.

Range

Management of the range resources is of vital importance toward the resolution of the RANGE MANAGEMENT and RIPARIAN MANAGEMENT issues. Livestock management is a key factor in this issue. Livestock production is the second most important industry in Lake County. The emphasis in livestock production has been based on the cow-calf unit (a unit being one cow and her calf). Fremont National Forest rangeland is important because it provides high quality forage during the period that home pastures are growing or being harvested for hay. Many local ranch operations could not remain in business without the seasonal spring-summer-fall range provided on the Forest One of the goals of the National Forest grazing permit program is to provide stability to local ranch operations. Moreover, grazing is a management tool used to improve vegetation, to promote ecological diversity for a variety of other uses, and to meet other resource objectives, such as site preparation or release in timber management.

An important attribute of the Forest are the riparian areas, which provide forage and water for cattle Many of these riparian areas are ecologically fragile. Accordingly, livestock use of these areas must be managed.

On the Fremont National Forest, grazing allotments have been classified according to the level of intensity at which they are managed The Forest presently utilizes three intensity levels - intensive, deferred, and season-long grazing Thirty one of the Forest's allotments are managed intensively. Under such management, livestock are regularly rotated among pastures in coordination with different stages of plant growth. A deferred system is presently in operation on 19 allotments Under this system, livestock are not moved onto an allotment until plant growth has reached the stage of maximum nutrient reserve in the root system Livestock are generally free to choose their own foraging areas unless constrained by topography and/or boundary fences Season-long grazing is in effect on 22 allotments. Typically, livestock enter these allotments on a specific date in spring or summer and forage at random until removed at a specific date in fall.

supply and demand

The Forest is divided into 71 grazing allotments, and permits about 71,000 AUM's of grazing yearly. With effective management, the Forest has the capability to continue supplying forage at this level. Approximately 20 percent of these allotments exhibit some degree of resource damage (primarily to riparian areas) from livestock use. Several of these allotments have had long-term overuse by unauthorized livestock. Growth of desirable forage plants on many of the meadowlands within these allotments is below optimum because of overgrazing. While capable of supporting more grazing use, meadows require more restrictive management to protect soil, water, and wildlife resources and to allow for plant composition (desirable forage species) to improve.

Demand for grazing use on the Forest is higher than can be accommodated under current management direction. Although requests for additional grazing permits (primarily for cattle) are received each year, development of optimum grazing systems and more range improvements are needed before use can be expanded on the understocked allotments These improvements are necessary to prevent overuse and to improve the distribution of livestock. Grazing transitory range created by timber harvests usually requires additional riding, salting, water developments, and fencing

Permittees normally share (50-50) in the range improvement costs on their allotments. Limited funding, for both permittees and the Forest, has slowed development of allotments The surplus forage on grazing allotments will generally remain unused until necessary improvements have been installed to allow utilization of forage without undue damage to other resources.

The need exists to maintain grazing range in satisfactory condition and to meet the minimum requirements for other resources such as wildlife, soil, and water quality. These factors will continue to limit the number

of livestock permitted to graze on the Forest. More optimal grazing system implementation, permittee commitment, additional improvements, and public education would increase the Forest's ability to support additional livestock. However, it is not anticipated that these increases would meet current or future demand.

Fish and Wildlife

Fish and wildlife resources are critical to the resolution of both the FISH AND WILDLIFE MANAGEMENT issue and the KLAMATH TRIBE issue.

The Fremont National Forest contains 32 major habitat types or components, on which 323 native vertebrate fish/wildlife species and 19 exotic species depend for their continued existence. The habitat types are presented in Table 2.

Table 2. Major Habitat Types or Components on the Fremont National Forest and Associated Dependence of Wildlife Species (Excluding Fish)

HABITAT/COMPONENT	NUMBER OF SPECIES Required (1)	Heavily Dependent (1)	Often Used (1)
Aquatic/Semi-Aquatic			
Perennial Stream/Riparian	9	140	156
Intermittent Stream/Riparian	0	20	217
Natural Lake/Pond/Riparian	0	156	128
Man-made Reservoir/Pond/Riparian	0	104	145
Marshes	0	130	109
Wet Meadows/Moist Meadows	0	127	113
Seeps/Springs/Riparian	0	64	132
Wet/Moist Lodgepole Pine			
early succession	0	33	143
mature/old	0	21	125
Shrub/Grass/Forb			
Dry Meadow	0	92	125
Early Forest Succession	0	67	124
Big Sage	11	83	99
Low Sage	10	76	104
Aspen			
Pure Aspen	1	44	140
Mixed Conifer/Aspen	1	46	139
Coniferous Forest			
Lodgepole Pine, Sapling	0	1	105
Lodgepole Pine, Mature	1	9	108
Lodgepole Pine, Overmature	1	12	105
Ponderosa Pine, Sapling	0	1	119
Ponderosa Pine, Young	0	7	124
Ponderosa Pine, Mature	1	28	108
Ponderosa Pine, Overmature	3	29	108
Mixed Conifer, Sapling	0	1	124
Mixed Conifer, Young	0	5	130
Mixed Conifer, Mature	1	24	113
Mixed Conifer, Overmature	3	31	107
Dead Trees (standing and/or down)	34	86	131

SEE END OF TABLE FOR FOOTNOTE

Table 2 Continued. Major Habitat Types or Components on the Fremont National Forest and Associated Dependence of Wildlife Species (Excluding Fish)

HABITAT/COMPONENT	NUMBER OF SPECIES Required (1)	Heavily Dependent (1)	Often Used (1)
Mule Deer			
Winter Range	1		
Summer Range	1		
Cliffs/Caves/Talus	14	48	70

(1) Degree of habitat dependence. A) Require - this habitat is required for continued survival of these species on the Forest, B) Heavily Dependent - these species are very dependent on this habitat for reproduction, and/or feeding, C) Often Used - this habitat is often used by these species

At present, only two threatened or endangered species are known to exist on the Forest. The peregrine falcon (endangered nationally) formerly nested on the Forest and is presently in its first year of reintroduction. The bald eagle (with "national threatened" status in the State of Oregon) occurs as a year-long resident. Several species of plants, mammals, birds, and fishes as well as one reptile and one invertebrate species listed on the Regional Forester's Sensitive Species List are found on the Fremont National Forest.

The monitoring of representative indicator species provides a way to assess the effects of resource management practices on fish and wildlife habitats. A certain animal is chosen as an indicator species because it is a "featured species" or it is believed to be an "ecological indicator" or both. A featured species represents one or more of the following:

- species with special habitat needs that may be influenced significantly by planned management activities;
- threatened and endangered plant and animal species on state and federal lists;
- species that are hunted, fished or trapped;
- nongame species of special interest.

An ecological indicator is thought to represent other species. The habitat requirements for an ecological indicator species may also provide habitat for other species which require a particular habitat. Indicator species selected for the Fremont National Forest are shown in Table 3

Table 3. Fremont National Forest Management Indicator Species/Groups

INDICATOR SPECIES	REPRESENTATIVE OF:
Mule Deer	Hunted species
Bald Eagle	Threatened species
Trout Family	Riparian/stream ecosystems
Three-toed Woodpecker	Overmature/mature lodgepole pine
Red-naped Sapsucker(1)	Aspen and deciduous riparian ecosystems
Primary Excavators (all cavity nesters)	Dead trees
Goshawk	Overmature/mature ponderosa pine Mixed conifers
Peregrine Falcon	Endangered species
Pine Marten	High-elevation forests, both lodgepole and mixed conifers
Pileated Woodpecker	Overmature/mature mixed conifer forests

(1) The American Ornithological Union changed the name of the yellow-bellied sapsucker to red-naped sapsucker

Unique species will require minimal management through standards and guidelines These species include great grey owls, prairie falcons, golden eagles, and osprey Other nesting raptors, such as red-tailed hawks will be protected as well.

Management of the indicator species will usually require significant allocations of land or resources. Management of the unique species can be accomplished primarily through mitigating and coordinating measures or minor allocations In cases where the unique and indicator species/groups share the same habitats, managing for the indicator species will usually protect those additional species dependent on the same habitats

The Forest shows varying capabilities to produce/maintain habitat for those species for which "demand" has been demonstrated. Table 4 presents the capabilities for selected species.

Table 4. Capabilities of the Fremont National Forest to Produce Habitat for Selected Species

SPECIES	DEMAND	PRODUCTION CAPABILITY
Mule Deer	High	High
Pronghorn Antelope	Increasing	Limited
Black Bear	Low	Limited
Coldwater Fish (trout)	High	High
Warmwater Fish	Increasing	High
Blue Grouse	High	High
Furbearers	Fluctuates	High
Other Small Game/Waterfowl	Increasing	Limited

supply and demand
Oregon's population is expected to increase over the next 50 years. The number of hunters and anglers and thus, demand for **hunting and fishing** opportunities is also expected to increase. Past projections of trends for hunting and fishing underestimated, to a large degree, the actual increases in these activities (Cordell and Hender 1982).

Demand for *deer hunting* on the Forest exceeds both the current supply and the supply that would be provided if Oregon Department of Fish and Wildlife (ODF&W) herd management objectives were met. This assessment is based on: hunter dissatisfaction with the quantity of big game and the quality of present hunting opportunities, the oversubscription of limited entry deer tags for the Forest and surrounding area, Klamath Tribe needs, and historical records from the 1960's.

The ODF&W has developed herd management objectives through estimations of carrying capacity based on models of herd performance since 1968. The ODF&W recognizes that rising demand for deer hunting cannot be met continually, and has put ceilings on the numbers of deer it can supply. ODF&W objectives establish deer population numbers, hunter numbers, harvest levels, success ratios, and buck escapement levels for each game management unit in eastern Oregon.

The Forest's share of the objectives for the five big game management units within its boundaries are:

2,789 surplus bucks available for harvest.
2,789 surplus antlerless deer available for harvest when all herd objectives are met.

Demand for *elk hunting* in Oregon is increasing. The present elk population on the Fremont National Forest is composed of small, scattered herds. In 1988, the ODF&W instituted the first bulls-only season on the Forest; consequently, they expect elk populations to expand at a faster rate. The ODF&W feels that this accelerated population growth will not be explosive, therefore conflicts with mule deer are not expected.

Relatively small populations of *other game animals* such as black bear and antelope occur, as habitat for these species is inherently limited on the Forest. Hunting demand is heavy for antelope and moderate for bear. The scarcity of suitable habitat does not allow for major increases in these populations. Most of the current demand for small game and waterfowl on the Forest is of local origin While this demand is increasing, the Forest has low natural capabilities to increase populations of most of these species

Demand for *cold-water fishing* opportunities has increased over the last decade and will continue to do so as the population increases Heavier use of the Forest's fisheries, especially by local people, is expected. Both native and stocked trout populations are heavily fished annually, with little carry-over of big trout to the next season. The size and catch rates of trout have declined in the last decade.

As with big game, the current demand for trout exceeds the supply. This assessment is based on: State restrictions placed on fishing in order to "divide" limited fish numbers among more people; immediate and heavy use of new fisheries as they are created (Vee Lake and Holbrook Reservoir); angler dissatisfaction with crowded fishing areas, small fish, and few fish per unit of effort; and the restrictions imposed by the Forest Service on heavily used water bodies, such as Blue Lake or Withers Lake, to protect the resources.

Demand for *warm-water fishing*, although much smaller in magnitude, is rapidly increasing.

Demand for *furbearers* fluctuates dramatically by species in response to market conditions. In some years, furbearing species with population surpluses may be only lightly harvested, while others are heavily trapped. A current example of such fluctuation can be seen in the relatively high demand for coyote and bobcat, coupled with low demand for beaver. The Forest has "good" populations of most commonly trapped furbearers and has the capability to substantially increase these populations

Roadless Areas

Roadless areas are regarded as a resource of this Forest As such, the management of this resource and, more specifically, the allocation of these areas is a major determining factor in the resolution of the ROADLESS AREA MANAGEMENT issue.

Roadless areas are defined by nationally established criteria as tracts of land 5,000 acres or larger, with no engineered roads or other substantial development. They are relatively undisturbed tracts of the forest ecosystem which have neither been set aside as wildernesses, nor altered by road building, timber harvesting, or campground developments. Although old wagon trails, primitive roads, cabins, camps, and other minor evidence of human endeavor can be found in these areas, they still resemble the untouched forest environment.

Ten areas on this Forest were originally identified and inventoried as roadless in the national Roadless Area Review and Evaluation (RARE I and II) conducted by the Forest Service from 1976 to 1982. One of these areas, the Gearhart Mountain Addition, was designated as Wilderness by the 1984 Oregon Wilderness Bill (HR 1149), passed by Congress in June of 1984. Consequently, the 4,114-acre Gearhart Addition became part of the Forest's Gearhart Mountain Wilderness. The Fremont National Forest has nine roadless areas remaining, totalling 83,360 acres Four of these areas occur entirely within the boundaries of the Lakeview Federal Sustained Yield Unit, and three have more than 50 percent of their area within the Unit.

Roadless areas provide diverse, undisturbed habitats for fish and wildlife, and can be especially important for species sensitive to human disturbance or dependent on such limited habitat components as old-growth conifers.

Most of the numerous streams flowing from the roadless areas drain into the large basin valleys surrounding the Forest. Water quality in these streams is high, with relatively low levels of sediment and turbidity. The water is used both for seasonal irrigation and domestic consumption. Major streams originating or flowing through the Forest's roadless areas include the Sycan River and the North Fork of the Sprague River. The Deep Creek and Dairy Creek drainages are also included.

Examples of most of the Forest's 57 plant communities occur in the roadless areas, reflecting the topographic and elevation diversity of these lands. Five sensitive plant species have been confirmed as present in these areas. Although predominantly forested, the roadless areas also contain numerous moist meadows, high sage basins, and other shrub communities. Such areas also provide forage for domestic livestock.

About six percent of the Forest's timbered lands lie within its roadless areas. Total commercial timber volume within the Forest's roadless areas is estimated at about 586 million board feet. Roadless areas within the Lakeview Federal Sustained Yield Unit account for about 60 percent of this total.

Some of the Forest's most extensive stands of old-growth ponderosa pine and white fir are found on these lands. Of roughly 640,000 acres of old growth inventoried on the Forest, about 45,350 acres (seven percent) occur within the nine roadless areas.

supply and demand

During the development of this Plan, nine unroaded areas were recognized on the Forest, including:

	acres	
Antler	5,413	
Buck Creek	8,507	
Dead Horse Rim	12,420	
Hanan Trail	9,039	
Brattain Butte	5,880	
Coleman Rim	8,393	
Drake-McDowell	115,768	
Crane Mountain	23,261	
Mt. Bidwell	4,679	
	83,360	TOTAL ACRES

These areas provide a variety of recreational opportunities, including hiking, backpacking, horsepacking, cross-country skiing, hunting, and fishing. In 1984, roadless areas accounted for 7,780 Recreational Visitor Days (RVD's), or four percent of the Forest's average annual recreational use. All unroaded lands on the Forest have been classified as semiprimitive nonmotorized (SPNM) settings, using the Recreation Opportunity Spectrum (ROS) guidelines. For a discussion of SPNM lands and their role in recreation on the Forest, please refer to the Recreation section in chapter III of the accompanying EIS.

One measure of demand for roadless areas is reflected in the demand for recreational opportunities within semiprimitive nonmotorized (SPNM) settings. As discussed in the Recreation section of the EIS, Chapter III, demand for this type of recreation is increasing. If this trend continues, demand will exceed the Forest's supply of SPNM settings by the year 2015 or sooner.

SUPPLY AND DEMAND SUMMARY OF RESOURCES RELATED TO KEY ISSUES

The supply figures presented in Table 5 were determined by analysis of benchmark computer runs. Benchmarks were developed in order to help define the decision space available to the Forest. They were designed to explore the maximum supply potentials that could be produced while satisfying all of the legal requirements as defined by the National Forest Management Act. The legal requirements included those pertaining to maximum size and dispersion of harvest units, management of certain streamside/riparian areas, and minimum habitat requirements for specific wildlife indicator species and threatened and endangered species

Table 5. Summary of Projected Supply and Anticipated Demand (Annual)

KEY RESOURCE AREAS	UNIT	DECADE 1	2	3	4	5
Timber (Allowable Sale Quantity)	MMBF					
Lakeview Working Circle						
Projected Supply						
Current Direction		9.3	9.3	9.3	9.3	9.3
Maximum Timber Benchmark (1)		11.0	11.0	11.0	11.0	11.0
Forest Plan		10.8	10.8	10.7	10.7	10.8
Anticipated Demand (2)		15.3	15.5	15.3	15.5	15.3
Klamath Basin Working Circle						
Projected Supply						
Current Direction		12.1	12.1	12.1	12.1	12.1
Maximum Timber Benchmark (1)		14.3	14.3	14.3	14.3	14.3
Forest Plan		13.9	13.8	13.5	13.5	13.6
Anticipated Demand (3)		15.5	16.6	18.4	19.6	19.6
Forest Total						
Projected Supply						
Current Direction		21.5	21.5	21.5	21.5	21.5
Maximum Timber Benchmark (1)		25.3	25.3	25 3	25.3	25.3
Forest Plan		24.7	24.7	24.2	24.3	24.4
Anticipated Demand (2)		30.7	32.0	33.6	35.1	34.9
Roadless Areas/Fish and Wildlife	MRVD's					
Dispersed Recreation Including Wildlife and Fish Use						
Projected Supply						
Current Direction		667.6	523.5	379.9	237.6	242.6
Maximum Dispersed Recreation		711.7	628.0	54.9	462.2	470.8
Forest Plan		667.4	546.7	428.3	309.9	317.7
Anticipated Demand		171.5	181.8	195.3	211.1	242.7
Projected Supply of Semiprimitive Nonmotorized	MRVD's					
Current Direction		9.1	7.1	4.9	3.6	0 0
Maximum SPNM Recreation Opportunities		11.8	11.8	11.8	11.8	11.8
Forest Plan		7.2	6.1	6.0	5.9	5 9
Anticipated Demand		9.6	10.9	12.3	13 8	15.6
Projected Supply of Semiprimitive Motorized	MRVD's					
Current Direction		3.4	2.2	1.1	0.0	0.0
Maximum SPM Recreation Opportunities		5.8	5 6	5.4	5.1	5.1
Forest Plan		2.4	2 7	3.0	3.4	3.9
Anticipated Demand		2.4	2.7	3.0	3.4	3.9

SEE END OF TABLE FOR FOOTNOTES

Table 5 Continued. Summary of Projected Supply and Anticipated Demand (Annual)

KEY RESOURCE AREAS	UNIT	DECADE 1	2	3	4	5
Range (Grazing Use)	MAUM's					
Projected Supply						
Current Direction		64.2	63.1	66 0	61.7	59.5
Maximum Timber Benchmark (1)		99.7	97.7	99.8	97.9	96.1
Forest Plan		75.6	70.1	71.9	69.9	68.7
Anticipated Demand		82.0	80.0	83 0	80.0	78.0

(1) With Minimum Management Requirements
(2) Demand projections based on meeting one full work shift capacity in the Unit
(3) RPA 1985 Demand Trend projections for timber as adjusted to Klamath County.

OTHER RESOURCES

The following resources are not directly related to the attempted resolution of the major issues. They do address most of the remaining issues and management concerns, and are important to the management of the Forest.

Soil

Soil contains the nutrient elements required by all vegetation. It provides a medium in which plant roots can find anchorage, and in which myriads of small life forms important to the health of the forest ecosystem can thrive. The stability and fertility of forest soils are crucial in the production of high-quality timber, forage, water, and wildlife habitat. Figure 3 illustrates the relative soil fertility of the Forest as a whole.

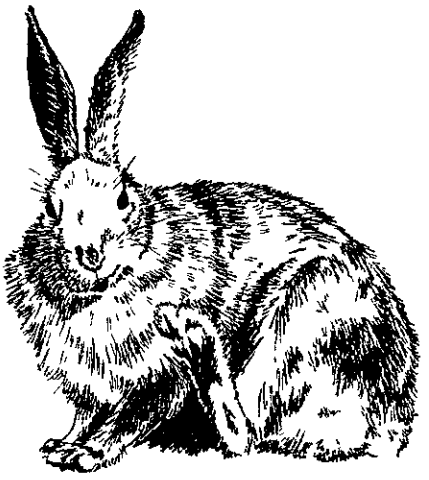
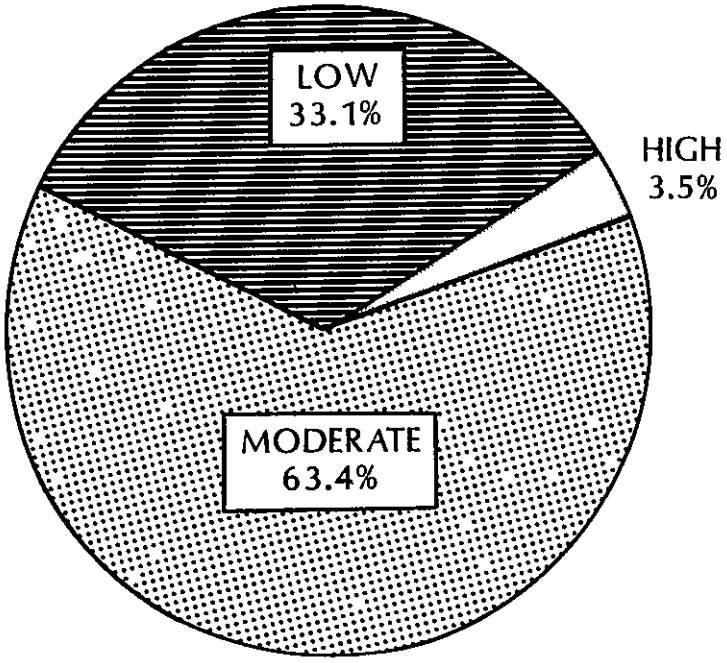


Figure 3. Proportion of Fremont National Forest Soils with High, Moderate, and Low Soil Fertility.



In general, soils on the Fremont National Forest are volcanic in origin Some of these volcanic materials have been covered with a layer of pumice/ash This condition is most common across the northern half of the Forest.

For analysis purposes, the Forest's major soil type/landform associations have been grouped into fourteen capability areas. These are presented in Table 6

Table 6. Capability Areas on the Fremont National Forest

1 Alluvial Bottomlands
2. Scabland Plateaus
3. Toeslopes, Benchlands, Alluvial Sage-Shrub Lands and Savanna Lava Tablelands
4. Lava and Tuff Tablelands
5 Lava Tablelands with Ash/Pumice Mantles
6 Moderately Steep Smooth Sideslopes and Eruptive Centers, in Steep V-Shaped Coniferous Canyonlands
7. Moderately Steep Smooth Sideslopes and Eruptive Centers with Ash/Pumice Mantles
8 Rhyolitic Tablelands with Ash/Pumice Tablelands
9. Rhyolitic Domes, Dissected Breccia Sideslopes, and Subalpine Coniferous Lands
10. Steep Dissected Ridges and Sideslopes
11. Steep Dissected Ridges and Sideslopes with Shallow Soils, Subalpine Grasslands, Miscellaneous Landtypes
12 Basin Lands with Ash/Pumice Mantles
13 Scabland Plateaus and Lava Tablelands Complex
14 Rhyolitic Domes and Sideslopes with Ash/Pumice Mantles

Table 7 displays the number of acres within each capability area and indicates relative soil fertility as well as potential for erosion, compaction, displacement, and/or mass movement.

Table 7. Relative Soil Fertility and Potential

Capability Area	Acres	Relative Fertility	POTENTIAL FOR: Erosion	Compaction	Mass Movement	Displacement
1	41,464	High	High	High	Low	High
2	99,230	Low	High	High	Low	Low
3	43,343	Low	High	Moderate	Low	Low
4	137,759	Moderate	Low	High	Low	Low
5	212,671	Moderate	Low	Low	Low	Moderate
6	119,560	Moderate	Moderate	High	Low	Low
7	80,922	Moderate	High	Low	Low	High
8	37,584	Low	Low	Moderate	Low	Moderate
9	72,795	Moderate	High	Low	Low	High
10	100,515	Moderate	Moderate	Moderate	Moderate	Moderate
11	102,245	Low	High	Moderate	Moderate	Low
12	45,242	Low	Moderate	Moderate	Low	Moderate
13	60,936	Low & Mod	Low & High	High	Low	Low
14	35,380	Low	High	Low	Low	High

Road building, timber harvesting, and grazing are the management activities that generally impact soil productivity the most. Erosion, compaction, and displacement are the parameters most often affected by these activities. Timber access roads, spur roads, skid trails, and landings are the major sources of accelerated erosion. Though some mass movement of road fill slopes and cutbanks occurs, overall, slope stability is a minor problem. Slump failures on the Forest generally occur in areas derived from pyroclastic bedrock materials. During most operating seasons, compaction is a concern, especially during the early part of the operating season.

Soil displacement results primarily from tractor harvesting, and use by off-road vehicles and cattle. On soils derived from ash, pumice, or rhyolite, excessive displacement can occur on any slope, although the potential is greater on steeper slopes.

supply and demand

Since soil formation takes place over thousands of years, the supply of soil on the Forest is considered fixed and nonrenewable. Local and national demand has increased for timber, range, water, recreation, and wildlife resources, indirectly creating a demand for high soil productivity to provide these resources. However, when production of such resources is increased, incremental pressures on Forest soils are also increased.

Water

Watersheds on the Forest are generally in good condition. Most of the water on the Fremont National Forest is produced as streamflow in about 5,300 miles of perennial and intermittent stream channels. In general, water quality is good at elevations above 5,500 feet, and good to moderate below this point. The primary water quality problem is temperature. The two streams with the most significant temperature problems are the Lower Sycan River and the Chewaucan River. Other water quality parameters, such as suspended sediment, turbidity, and conductivity are within accepted levels for unpolluted mountain streams.

The most widespread watershed problem on the Forest is erosion. A number of Forest activities, i.e., road construction and maintenance, timber harvesting, livestock grazing, and fire, have the potential to contribute, either independently or in combination, to erosion. Gully, rill, and sheet erosion contribute to reduction of soil productivity and sedimentation.

Road dust abatement is the largest consumptive water use on the Forest, averaging 45 million gallons of water in an average year. Other uses include:

timber production
forage production for wildlife and livestock
habitat for fish and waterfowl
recreation use by boaters and anglers
road construction and maintenance
drinking water for wildlife, livestock, and people
fire control

Table 8 presents estimates of current measurable water use on the Forest in an average year:

Table 8. Fremont National Forest Water Use(1)

USERS	CONSUMPTION (MM Gallons)
Mule deer	12
Livestock	31
Road maintenance	10
Road dust abatement (timber sale activity)	45
Road construction & reconstruction for timber sales	18

(1) Water use figures for an average year.

Water produced on the Forest is also important to adjacent farms, ranches, and communities. The town of Lakeview uses water collected from springs on the Forest as a portion of its municipal water supply, and most of the streams leaving the Forest are diverted to irrigate adjacent private lands.

supply and demand
Average annual water yield for National Forest acres, excluding private lands lying inside the Forest boundary, is approximately 385,000 acre feet per year.

Generally, annual demand for water exceeds the supply available from the Forest. In addition to supplying needed water for Forest management activities, water produced on the Forest is important to adjacent farms, ranches, and communities The town of Lakeview uses water collected from springs on the Forest as a portion of its municipal water supply. Most of the streams leaving the Forest are diverted to irrigate adjacent private lands.

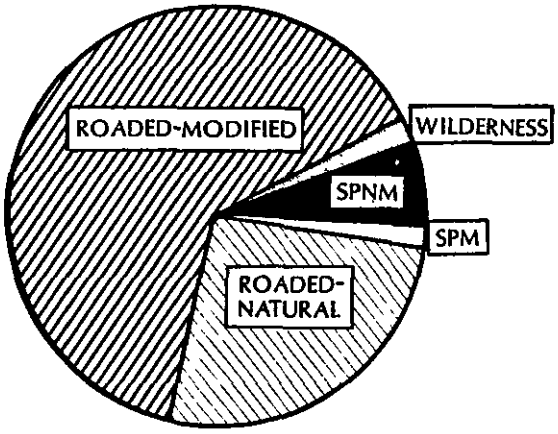
During the majority of water years, most of the available water supply within the Forest influence zone is over-appropriated (including Goose Lake Valley, Warner Valley, Chewaucan Marsh, Silver Lake, and Sprague River Valley). As a result, the use of deep wells for both irrigation and municipal uses is rapidly expanding. The aquifers tapped by these wells receive much of their water from Forest lands and demand for this resource will also soon exceed supply.

The amount of water produced on the Forest is a factor of elevation, precipitation, geomorphology, and soils. The greatest quantities are produced by the Gearhart Mountain-Winter Rim areas, followed by the Warner Mountains. Water yields from the remainder of the land base are much smaller, although still significant The current average annual water yield for National Forest acres (excluding private lands inside the Forest boundary) is about 411,000 acre-feet per year (4.11 inches per acres per year).

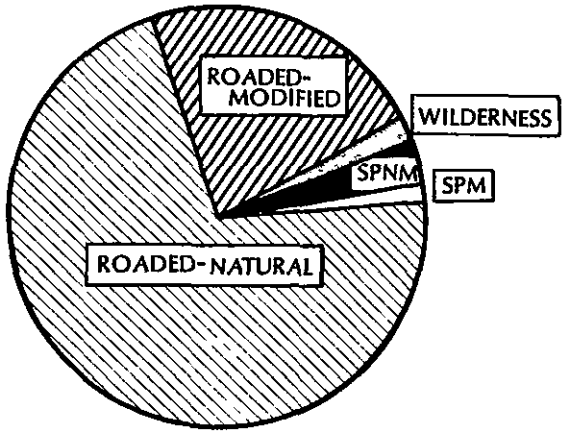
The Forest has limited opportunities for hydropower development because average annual streamflow is insufficient to support major projects.

Recreation
The Fremont National Forest provides recreational settings that vary from Congressionally designated wilderness to intensively-managed forest/range environments. Overall, the Forest averages 200,000 Recreation Visitor Days (RVD's) annually, with the majority of recreationists coming from Lake and Klamath Counties.

Figure 4. Recreation Opportunity Spectrum (ROS) Settings on the Fremont National Forest, and Recreational Use of those Settings.



ROS SETTINGS



RECREATIONAL USE, BY ROS SETTING

ROS Setting	Forest Acreage in the Setting	% Of Net Forest Acres	Recreational Use of ROS Setting (RVD's)	Annual RVD Capacity
Wilderness (1)	22,823	1.9%	3,200	3,400
SPNM	83,360	6.9%	7,200	10,817
SPM	19,796	1.7%	2,000	3,306
Roaded-Natural	430,959	36.0%	143,200	698,061
Roaded-Modified	641,370	53.5%	44,400	1,145,061
Total	1,198,308	100.0%	200,000	1,865,645

(1) See Chapter III, Visual Resources section for discussion of Wilderness ROS System

Dispersed recreation as measured in RVD's accounts for about 76 percent of all recreation on the Forest. Approximately 40 percent of all recreational use of the Forest is associated with hunting and fishing.

Developed recreation on the Forest comprises 35 sites, totalling approximately 304 acres and having a reasonable capacity of 2,703 persons at one time (PAOT). All of these developed sites occur within the ROS class, Roaded Natural. The Recreation Visitor Day (RVD) capacity, calculated on a daily basis, is 3,690 RVD's per day. Use associated with developed sites amounts to approximately 25 percent of the Forest's total recreation use

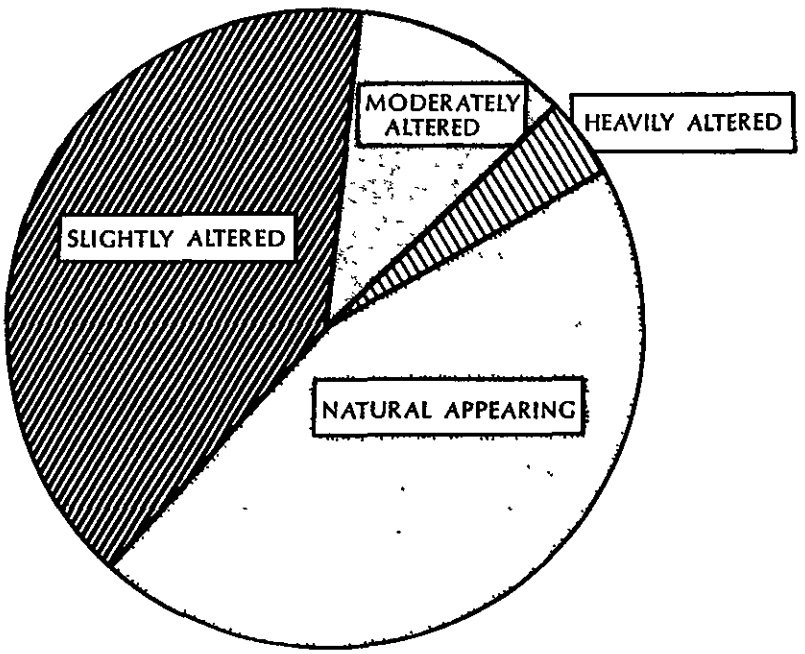
Warner Canyon, the only developed ski area on the Forest, supports 500 skiers per day Lack of vertical relief, inconsistent snow conditions, and relative isolation of the Forest have discouraged development of other ski areas.

The Forest has one *wilderness*, the Gearhart Mountain Wilderness, which totals 22,823 acres. Recreational use of the Gearhart Mountain Wilderness comprises about 1 6 percent of total recreational activity on the Forest. Much of the recreation use in the Wilderness takes place in a few relatively small areas, resulting in some degradation in those areas.

There are about 77 miles of Forest *trails*, with an additional 131 miles identified for potential development. Two National Recreation Trails (NRT's), the Fremont NRT and the Crane Mountain NRT are included in this inventory. About 15 miles of the NRT system have been completed.

The *visual* environment is a significant element in recreation settings. Figure 5 displays the Existing Visual Conditions (EVC) on the Forest

Figure 5. Existing Visual Conditions of Lands on the Fremont National Forest, 1985.



EXISTING VISUAL CONDITION (EVC) CLASSES	NUMBER OF ACRES IN EACH EVC CLASS	% OF NET FOREST ACRES
Natural Appearing	539,238	45%
Slightly Altered	479,323	40%
Moderately Altered	131,814	11%
Heavily Altered	47,933	4%
Total	1,198,308	100%

supply and demand
The Recreation Opportunity Spectrum (ROS) planning process was used to analyze and assess the supply and demand for recreation on the Fremont National Forest. ROS planning encompasses both dispersed and developed recreation. Acreage totals for each ROS class are displayed in Figure 4.

Demand for **dispersed recreation** in all ROS classes is expected to more or less double over the next 50 years. The Forest's ability to meet demand for dispersed recreation through the planning horizon (2030) varies by ROS class. Projected use for *semiprimitive nonmotorized* recreation on the Forest would begin to exceed current supply by about year 2015. The current supply of the *semiprimitive motorized* setting on the Forest is quite low compared to the Forest's other ROS settings. Demand for this setting is also relatively low. The ROS setting roaded-natural is used by recreationists more often than any other setting on the Forest, and this trend is expected to continue.

Demand for **developed recreation** is expected to increase by an average of two percent annually over the next 50 years. As mentioned previously, all developed sites occur within the *roaded natural* ROS class. While demand for roaded-natural appearing settings is projected to reach approximately 290,000 RVD's by 2030, the supply of this setting could accommodate the projected increase.

Current supplies of the *roaded modified* setting are far above present demand Although recreational use of this setting is projected to roughly double by 2030, the Forest's supply would be sufficient to accommodate more than ten times that amount of use.

Demand for **Wilderness** recreation is expected to increase by 80 percent between now and the year 2030. The capacity figures shown in Table 9 estimate the capacity of the Gearhart Mountain Wilderness to provide wilderness-semiprimitive recreation experiences The season of use, on the average, is 120 days. Therefore, these figures reflect use on the basis of Recreation Visitor Days (RVD's) per acre per 120-day season. Maximum potential capacity for the Wilderness is approximately 4,300 RVD's per 120 days.

Table 9. Gearhart Mountain Wilderness, Practical Maximum Capacity

AREAS	PERSONS AT ONE TIME
Trails	30
Blue Lake	19
Summit Meadows	14
Cross-Country Travel	6
Total	69

Cultural Resources
The Fremont National Forest manages one of the most extensive cultural resource bases in the Pacific Northwest Region. As indicated by the following list, a variety of artifacts, sites, and buildings comprise the Forest's cultural resource base.

Prehistoric (Native settlement)	*Historic (Non-native settlement)*
Pictographs	Homesteads
Petroglyphs	Mills
Burial sites	Immigrant roads
Seasonal camps	Railroad grades
House-pit villages	Mines
Trails	Cabins
Quarries	Administrative buildings
	Flumes

The Forest also contains areas of cultural and religious significance to living Native Americans.

supply and demand
Inventory surveys have been completed for 466,382 acres of the Forest and 702 sites have been discovered. Prehistoric sites dominate the inventory on the Forest, though there is a varied historic cultural resource as well.

The inventories identified several sites that may be eligible for nomination to the National Register of historic places. One of these sites, the Bly Ranger District station compound, has now been placed on the Register.

Vandalism of cultural resource sites is frequent on the Forest, as sites are numerous and easily found by Forest users. Current attempts to protect cultural resources involve monitoring sites and promoting public education.

Federal laws mandating the identification and protection of cultural resource sites reflect the demand to preserve this resource. Cultural resources are considered nonrenewable. Sites, artifacts, and historic structures cannot be replaced if destroyed, nor can the research information represented by these sites be replicated.

The cultural resources offer significant opportunities for research and interpretative activities. Much of the resource is still highly visible because of the thin soil layer and relatively light rainfall. Beyond the physical resource, the data to be gained through stratigraphy studies and other archeological techniques also represents a significant resource.

The Forest is assessing the interpretative potential of different areas for both historic and prehistoric resources. To date, the Winter Ridge Trail on the Paisley Ranger District has been identified as a potential interpretive area.

Minerals and Energy
On most of the Fremont National Forest, volcanic deposits such as basalt flows, volcanic tuffs, and ash and pumice layers overlie the older landforms more likely to contain mineral deposits. However, surface geologic indicators, as well as past and present activities on the Forest indicate that the potential for locatable minerals in some areas is relatively high. Mercury and uranium are mineral deposits on the Forest which have been mined commercially in the past. Current claims exist for these minerals, but no additional production has resulted.

Reported discoveries of gold, silver, lead, zinc, and copper have also occurred within Forest boundaries in the past, but there is no current production. Extensive exploration activity for gold is now occurring in the Quartz Mountain area where an active drilling program is in operation. Exploration results are currently being evaluated. A gold mine could go into production as early as 1989 or 1990.

Claims for locatable minerals are presently filed on approximately 35,000 acres within the Forest.

There has been sporadic activity regarding leases of potential energy-related resources on the Forest, but none of this leasing activity has yet generated energy production. Lease applications for geothermal resources on Forest lands have been numerous, involving a total of 33,300 acres of Forest lands. However, all of these applications were withdrawn when leases were issued and land rental fees assessed. Over 150 oil and gas lease applications were also received and issued in 1982 and 1983, but no drilling or production has resulted. All leases have terminated for nonpayment of land rental fees or have been withdrawn by the leasee.

A small hydro plant is currently being constructed on the southerly segment of the North Fork of the Sprague River

supply and demand
Information from the Oregon Department of Geology and Mineral Industries indicates that locatable minerals on the Forest offer a higher potential for production than do leasable minerals. Activities such as those occurring in the Quartz Mountain area indicate that there is a legitimate demand for locatable minerals. However, demand is very much dependent on market conditions for a given mineral As such, demand is a variable over which the Forest has very little control

Potential for development of geothermal resources on the Forest remains moderate and speculative. If development were to occur, it would probably affect about ten percent of the land overlaying the geothermal reservoir under development

Mineral materials suitable for road surfacing are found on the Forest and are used by the Forest Service, other agencies, and private users who purchase the materials under permit. These materials consist primarily of volcanic cinders and crushable basalts and andesites, located in developed and undeveloped pits. Forest supply levels for common variety sources of road rock can meet demand for the next 100 years at the present rates of extraction.

Areas around Cox Flat, Quartz Mountain, Bald Butte, Lee Thomas Meadow, Slide Mountain, Fitzwater Point, and parts of the Warner Mountains also have geologic features that could indicate the presence of locatable minerals The Paisley Hills are known to contain lead, zinc, and silver, but no sizeable veins have yet been located. Three large companies currently have sizeable claim blocks, reportedly for gold, on the Forest. Although not locatable under the mining laws, geology favorable to "hard rock" minerals also occurs near Medicine Mountain and in the Black Hills, both on Klamath Indian Reservation lands.

Uranium deposits appear to be concentrated in the White King-Lucky Lass area. Several deposits of perlite are also found on the Forest However, present processing costs make perlite mining only marginally profitable.

Facilities
The Forest's transportation system comprises over 6,232 miles of road and about 77 miles of trail. Average road density on the Forest is 3.68 miles of road per square mile of land. The road network,

developed primarily to serve timber management needs, is virtually complete. Most future development will involve reconstruction or relocation of existing roads.

Protection

Past fires have been largely responsible for the current distribution and abundance of plant communities on the Forest, and as fire suppression activities have increased, natural processes have been altered. Fire suppression has reduced the size of fires that occur, but also has resulted in a fuel bed more conducive to fire starts. Since 1908, the total number of fires per year has increased significantly, while the acreage burned has greatly decreased.

Forest policy calls for aggressive attack on all wildfires and during the past decade general fire suppression standards have been exceeded with a 98.8 percent containment rate. One multi-thousand acre fire continues to occur at least once every decade, and the Forest annually experiences at least one fire larger than 100 acres. Prescribed fire is used as a management tool for timber stand improvement, disposal of piled slash, range improvement, and wildlife habitat improvement.

Insects, diseases, and parasitic plants are major destructive agents on the Forest. Estimated annual timber losses from diseases, insects, and parasitic plants total 9,700,000 board feet. Current efforts to reduce these agents center around salvage and sanitation practices.

Lands and Rights-of-Way

Prior to August and September of 1906, numerous timber claims were filed by companies and individuals for much of the high site ponderosa pine timberlands within what are now the exterior boundaries of the Fremont National Forest. Similarly, many of the high country meadows and grasslands were patented by cattlemen for use as summer pasture. When the Goose Lake and Fremont Forest Reserves were created in the late summer of 1906, they were fitted into a landscape already covered with scattered private ownerships, both large and small. Subsequent proclamations and executive orders added other parcels. Although much improved by land exchanges over the years, the Fremont National Forest is still very much intermixed with private lands. The total land area within the Forest boundary is 1,710,580 acres; the net area administered by the Forest Service is 1,198,308 acres. Most of the remaining acres (approximately 512,300 acres) within the Forest boundary are owned by timber companies and private ranches.*

This intermingled ownership pattern has a considerable effect on Forest management. Contrasting management practices on private land influence resource management and fire protection efforts on Fremont National Forest lands. Water rights on private ownership often reduce downstream supplies on the Forest. Similarly, Forest management practices can have desirable or adverse effects on adjacent privately-owned lands.

* National Forest and private land acres vary from year to year due to land exchanges.

Management practices on the Forest also influence local tax bases; and, indirectly, the tax loads carried by private landowners. Through the 25 Percent Fund, the Fremont National Forest pays 25 percent of its gross receipts to the counties in which it is located, for the support of schools and roads. When Forest receipts increase the amount distributed to the counties is proportionately larger and the tax burden on private landowners is lessened; the converse is true when receipts decrease. Land exchanges can also affect the 25 Percent Fund by changing the acreage distribution between counties. This determines the share of the 25 Percent Fund each county receives.

The intermingled ownership pattern has made it necessary for both the Forest Service and large private timber company landowners to exchange rights-of-way and enter into shared road systems. There are about 700 miles of shared roads with Weyerhaeuser Company alone plus another 130 miles of cooperative roads with Gilchrist Timber Company and Fremont Sawmill. The Forest also has purchased hundreds of easements from individuals over the years.

The intermingled ownership pattern also contributes significantly to the number of special use permits issued by the Forest; such as special use easements to access private parcels, rights-of-way for ditches and reservoirs, and permits for pastures associated with private lands and topographically unsuited for inclusion in allotments, etc. Active special use permits on the Forest average about 230; sometimes seasonal uses require an additional 5 to 25 temporary permits.

Utility/transportation corridors on the Forest currently pose no significant management problems. Major transportation corridors crossing or adjacent to the Forest include portions of U.S. Highway 395, Oregon State Highway 140 and Oregon State Highway 31. The two extra high voltage (EHV) corridors located on the Forest contain 500 KV lines owned by Pacific Power and Light, Bonneville Power Administration and Portland General Electric, and are designated in this Forest Plan. Both have room for additional transmission facilities. New corridor proposals will be considered on a case-by-case basis.

The Fremont National Forest Landownership-Classification Plan (March, 1980) establishes current priorities for acquisition and disposal of land by exchange, purchase, or donation. The major objective continues to be acquisition of key parcels to meet specific resource needs and increase management efficiency by consolidating without materially affecting Forest acreage.

INFORMATION NEEDS

This section is devoted to listing the research and/or information needs identified during the development of this Forest Plan Many of the needs have been identified as a means to substantiate some of the assumptions made during the planning process. Other needs are intended to explore new areas in resource management. This set of needs may expand if subsequent monitoring and evaluation identify additional needs.

TIMBER

1. Conduct Forest fertilization studies.

2. Update timber inventory or Landsat related update of the 1980-81 inventory.

CULTURAL RESOURCES

3. Complete the forest-wide cultural resource inventory on lands scheduled for ground-disturbing activities and lands allocated to other, nonground-disturbing type management activities.

4. Update the Forest Cultural Resource Inventory Plan through comparison of known site distributions to the probability model (high, medium, and low site probability areas).

5. Develop thematic management plans for the major historic themes represented on the Forest.

6. Update the Forest Cultural Resource Overview through the addition of new inventory data and new information gathered as a result of archeological and historical research conducted on the Forest.

7. Determine those sites for which American Indian religious/cultural values may exist.

8 Coordinate the Forest's cultural resource data base with the Oregon SHPO to determine the specific relationships of the Forest properties to the Regional Research Design.

RIPARIAN

9 Conduct a riparian condition inventory: a study identifying current and potential riparian condition and ecological community type for Class I and Class II streams. This inventory will provide the information needed to establish riparian objectives, which will ultimately enhance resources dependent on riparian areas.

FISH AND WILDLIFE

10. Determine the recreational value of big game and fishing RVD's using more recent data and methods. The economic value assigned by the Forest Service to a visitor recreation day (RVD) for hunting big game ($30.00) or fishing resident cold water fish ($15.00) appears to be low. The most recent studies in Oregon on big game were conducted in the early 1970's.

11. Gather information on site-specific requirements of sensitive plants and animals which are present on the Forest to determine management effects and provide management direction for these species.

12. Increase effort to obtain information regarding estimates of the recreation attributable to wildlife viewing on the Fremont National Forest. The current system of identifying this information (USFS Recreation Information System - i.e., RIM) and its application on the Forest need to be modified to obtain better estimates of this use.

13. Conduct more research to determine the amount of habitat needed by cavity nesters. More specifically, how many wildlife tree clumps over what acreage will provide what level of potential

population of cavity-dependent species? Are the numbers of dead trees per potential population level of cavity-dependent species outlined in *Wildlife Habitats in Managed Forest* (USDA Forest Service Publication #553) still valid? This is a research question that needs to be addressed by the research section of the Forest Service.

14. Review wildlife habitats on the Forest, especially ponderosa pine old-growth habitat, and determine if additional indicator species are needed to represent those habitats and associated wildlife species In addition, gather information on pileated woodpecker populations to determine whether this bird is appropriate as an indicator species of old-growth habitat on the Forest.

15. Gather more information on Klamath Tribe hunting and fishing needs. The Forest should also determine what wildlife and fish species are important to the Tribe's cultural needs

16. Examine effects of the Forest's underburning programs on wildlife species, especially mule deer and ground-dwelling species. An underburning monitoring program presently collects information on vegetation, but more specific information is needed on effects on wildlife populations.

17. Gather more information on elk populations and elk habitat needs on the Forest.

18 Examine mule deer and livestock competition for forage on winter range to determine effects of present livestock management on mule deer habitat. Gather additional information on forage values of bitterbrush and on methods to improve winter range forage base.

19. Explore feasibility of road closure areas during hunting season to provide a recreational hunting experience in an area with limited access.

20. Examine effects of uneven-aged timber management on big game habitat, especially the Forest's ability to produce forage.

21 Gather additional information on the effects of land management activities on federally-listed threatened and endangered species.

22 Inventory the short-nosed sucker and the Lost River sucker to determine occurrence, distribution, and abundance on the Forest.

23. Gather information on the Forest's aquatic habitats. Determine if management of these aquatic habitats will produce trout.

SOILS

24. Increase knowledge of the physical, chemical, and biological properties of the soil. This kind of information will be used to enhance the productivity of the soil.

25. Solve problems in the use and management of the many different soils on the Forest. This will increase the ability to utilize the various soils wisely, to conserve this resource, and to reduce and minimize environmental pollution.

26 Conduct additional research relating to soil fertility and fertilization, plant-nutrient relationships, pumice soils, and the effects of soil disturbing activities on productivity.

27. Although considerable research has been conducted along these lines in the west, conduct research that relates more closely to the soil/vegetation conditions on the Fremont National Forest.

RANGE

28. Conduct a noxious weed inventory: a study that identifies and classifies weeds and measures levels of infestation. Then develop a feasible and economic means of noxious weed control.

RECREATION

29. Determine Off-road vehicle (ORV) use and update the ORV plan.

30. Conduct a marketing survey of recreation to determine the needs and desires of the recreating public.

31. Develop a program to determine the actual recreation use on the Forest.