3

United States
Department of
Agriculture

Forest Service

**Pacific
Northwest
Region**

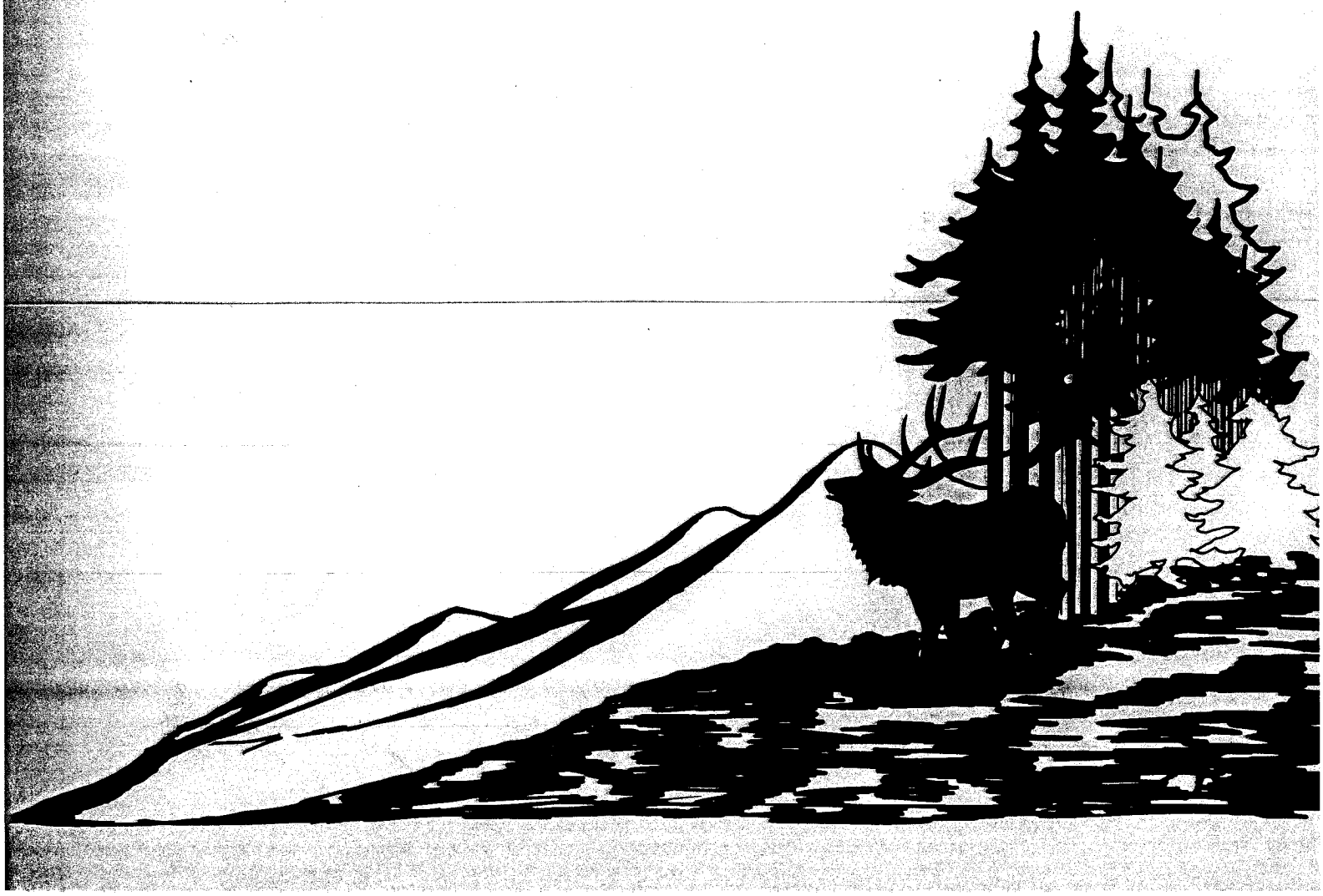
1990

Appendices – Volume II

Final Environmental Impact Statement

Land and Resource Management Plan

Umatilla National Forest



APPENDICES

FINAL ENVIRONMENTAL IMPACT STATEMENT

LAND AND RESOURCE MANAGEMENT PLAN

UMATILLA NATIONAL FOREST

TABLE OF CONTENTS Page

VOLUME II

APPENDIX E	MITIGATION MEASURES	E-1
APPENDIX F	INDIAN RIGHTS	F-1
APPENDIX G	NATIONAL WILD AND SCENIC RIVERS	G-1
APPENDIX H	RESEARCH NATURAL AREAS (RNA's)	H-1
APPENDIX I	MINERALS, LOCATABLE AND LEASABLE	I-1
APPENDIX J	DETERMINATION OF LANDS SUITABILITY	J-1
APPENDIX K	CHOICE OF TIMBER HARVEST METHOD	K-1
APPENDIX L	SENSITIVE PLANT SPECIES	L-1
APPENDIX M	MANAGEMENT REQUIREMENTS	M-1
APPENDIX N	PUBLIC INVOLVEMENT	N-1

NATURE AND PURPOSE OF APPENDICES

Appendices supplement the Final Environmental Impact Statement (FEIS) by providing more extensive detail on the above selected subjects (appendices). Appendix **A** is a summary of the process and public and management comments prior to the DEIS, and Appendix **N** is a post DEIS summary of public involvement, comments, and Forest Service responses. Appendix **B** is a technical description of the complex analysis process. Appendices **D, E, J, K,** and **M** are more detailed documentations of pertinent planning procedures. Appendices **C, G, H, I,** and **L** are primarily more extensive descriptions of particular resources. Appendix **F** outlines Native American rights.

APPENDIX E

APPENDIX E

MITIGATION MEASURES

TABLE OF CONTENTS

	Page
INTRODUCTION	E-1
Types of Mitigation (Table E-1)	E-1
Summary of Mitigations (Table E-2)	E-2
Summary of Management Strategies by Alternatives (Table E-3)	E-10
Modeling Constraints of the FORPLAN Model for the Umatilla National Forest	E-11
Modeling Constraints by Alternative (Table E-4)	E-16
Best Management Practices	E-18
Mitigation Measures and Vegetation Management Methods	E-24
References	E-33

APPENDIX E

MITIGATION MEASURES

INTRODUCTION

Mitigation measures (CFR 1508 20) (U.S. Laws, Statutes, etc. 1979) are applied to reduce, avoid, minimize, rectify, or compensate for potentially adverse effects resulting from various management activities All alternatives have built-in mitigation measures, in varying degrees, through standards and guidelines, Best Management Practices (BMP's), management requirements, management area directions, and other resource direction and practices

Appendix E describes some of the measures used in mitigation in the alternatives and Forest Plan. The Appendix is composed of three sections. The first summarizes Forest-wide Standards and Guidelines, management area standards and guidelines, modeling and resource activities used to mitigate (in so far as possible) potential adverse effects inherent in resolving the issues. The second section covers BMP's and the BMP implementation process that will be used. The last section summarizes mitigation measures from the Pacific Northwest Region's EIS for Managing Competing and Unwanted Vegetation that will also be used in Forest Plan implementations.

TYPES OF MITIGATION

Table E-1, listed below, lists and defines the types of mitigation. They are designated a code letter for reference use in subsequent tables

TABLE E-1
TYPES OF MITIGATION

	CODE*	DEFINITION
Preactivity	A	Avoiding the impact altogether by not taking a certain action or parts of an action.
	B	Minimizing impacts by limiting the degree or magnitude of the action and its implementation
During the Activity	D	Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
Postactivity	C	Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
	E	Compensating for the impact by replacing or providing substitute resources or environments

* Code sequence as per 40 CFR 1508 20

MITIGATION

Mitigation in its different forms has been used at each step in the planning process as follows:

- The Forest-wide Standards and Guidelines (Appendix D, FEIS, and Chapter 4, LRMP) represent, in part, the necessary mitigation and resource coordination measures required by existing laws, regulations, and policies to deal with potential adverse environmental effects; they also provide direction on how activities (management areas) will be implemented on the ground. Some of the standards and guidelines have been developed by the interdisciplinary team in response to specific environmental conditions on the Forest.

- Best Management Practices (BMP's) are included in the standards and guidelines to protect and enhance water quality. Management activities having a potential to impact water quality, would in all alternatives be governed by these standards and guidelines, including Best Management Practices Best Management Practices are specifically designed to protect water quality, as required by Section 208 of the Clean Water Act. BMP's are essentially preventative measures. General BMP's will be selected and tailored for site-specific conditions to arrive at project-level BMP's for the protection of water quality. See the second section of Appendix E for a discussion of the process and practices.

- Management requirements (MR's) were the starting point for mitigation, since the measures were identified as mitigation in the implementing regulations for NFMA (36 CFR 219.27). MR's were incorporated into and have become one of the essential elements of the Forest-wide Standards and Guidelines

- Within each management area, a set of management practices is designed to create or perpetuate a desired condition, developed or protect some combinations of resources, and mitigate potential adverse impacts.

- Each alternative varies in amount and location of management areas and associated constraints in responding to the ICO's Therefore, the contribution toward, and magnitude of, mitigation also varies Each of the various mitigation forms is used in the alternatives, although emphasis tends to be on preactivity and during-activity approaches. The differences are shown in the alternative descriptions and the physical, biological, economic, and social effects displayed in this chapter and Chapter IV

- Most site-specific consequences will be addressed in subsequent project analyses and in plans in which the physical settings are known These project analyses will be addressed within the framework of the preferred alternative. Additional mitigation measures will be provided and implemented through operating permits, plans, and contracts for these various projects

- Activities and their effects, including effectiveness of mitigation, will be monitored, as shown in the Forest Plan (Chapter 5).

Table E-2 summarizes various adverse environmental effects, applicable standards and guidelines, type of mitigation, and pertinent management areas together with FORPLAN modeling constraints and resource activities.

Table E-3 displays acres affected by management area (strategy) for each of the alternatives

TABLE E-2
SUMMARY OF MITIGATIONS — UMATILLA NATIONAL FOREST

Resource Element	Adverse Environmental Effect as Defined by the ICO's	Forest-wide Standards & Guidelines Designed to Mitigate Adverse Environmental Effects	Type of Mitigation[1]	Management Areas (MA's) Which Provide Mitigation Standards & Guidelines [2]	FORPLAN Modeling Constraint[3]	Resource Activity Scheduling
Developed Recreation	Some developed recreation sites, associated with water bodies, are being used at or near capacity	REC General REC Rec Sites	B E, C	Developed recreation direction is provided in MA A6	A6	Sites planned for improvement (See Appendix A of the Plan.)
Semi-Primitive Recreation	Demand for Semi-primitive recreation could exceed the capacity by the year 2030	REC Dispersed REC Trails	A, B, D A, D, C	Semi-primitive recreation is provided by MA's A1, A2, A7 (Wild), A8, C8, F4, F4A	None	Annually update the Forest Recreation Opportunity Guide (ROG) annually Trail construction and improvement planned (See Appendix A of the Plan)
	Additional hunting capacity created by developing more road access, will diminish Semi-primitive recreation areas and hunting opportunities	REC Dispersed TRANS	A, B, D B	Semi-primitive recreation is provided by MA's A1, A2, A7 (Wild & Scenic), A8, C8, F4, F4A	None	
OHV Use	Past reduction of OHV areas has increased potential conflicts with other users and resources	REC Dispersed REC OHV REC Trails	B, C E	OHV use is restricted in MA's A1, A6, A7 (Wild), A8, A9, C1, C2, C5, & F4 OHV use is allowed in MA's A2, A3, A4, A5, C3, C3A, C4, C7, C8, E1, & E2	None	OHV trails planned See Appendix A of Plan
Visual Quality	Management activities can change the scenic landscapes on areas important for their visual qualities	REC VRM TBR REC/VRM 1-4, TBR Silv Sys. TBR Diversity 4,50,6 TBR Uneven-aged Silv	B, C, D B, C B, C B, C, D	MA's with sensitive visual landscapes — Without timber harvest A1, A2, A6, A7, A8, A9, B1, C1, C7, C8, F2, F4 With timber harvest A3, A4, A5, A7, C5, F4A	Visual Management Areas A3, A4, A5 Riparian Areas A7, C5, C7	Viewshed Corridor plans intended (See Appendix A of the Plan)
Wilderness	Demand for primitive recreation may exceed the supply	REC Dispersed	B, D	Primitive recreation is provided by MA B1	None	As required per National Wilderness Act and by Wilderness action plans (Appendix A of the Plan)

1 Table E-1 - Types of Mitigation 2 Table E-3 - Management Strategies by Alternatives 3 Table E-4 - Modeling Constraint by Alternative

TABLE E-2 (Cont.)
SUMMARY OF MITIGATIONS - UMATILLA NATIONAL FOREST

Part 2 of 7

Resource Element	Adverse Environmental Effect as Defined by the ICO's	Forest-wide Standards & Guidelines Designed to Mitigate Adverse Environmental Effects	Type of Mitigation	Management Areas (MA's) Which Provide Mitigation Standards & Guidelines	FORPLAN Modeling Constraint	Resource Activity Scheduling
Wilderness (Cont.)	Increasing wilderness hunting & mining activities (sanctioned by Congress) diminish management options available to preserve wilderness values	Minerals/Energy Non-Energy Mnrl.	B, D, C	Recreation and mining activities controlled by MA B1.	None	
Roadless Areas	Resolution of the roadless question will directly affect the ability of the Forest to provide Semi-primitive recreation opportunities, nondedicated old growth tree habitat, wood products, and big game habitat.			Roadless areas (5,000 or more acres) are retained in MA's A1, A2, A7 (Wild), A8, C8, & F2, F4, F4A (part).	11. Roadless Areas — A1, A2, A7, A8, C8, F2, F4 & F4A (part) Acres to minimum level management prescription	See 10-year Timber Sale action plan for Roadless areas to be altered (Appendix A of the Plan). Also see individual Roadless area prescriptions, Appendix C of FEIS.
Wildlife Habitat	Harvesting old growth tree habitat, & dead trees (snags), could result in potentially inadequate habitat for wildlife dependent species	WLDLF Old growth WLDLF Dead and down WLDLF Nongame WLDLF Riparian	A, D B	Snags are provided in all MA's with scheduled timber harvest and most other MA's Old growth tree habitat is provided in MA's C1, C2, and potentially all areas without scheduled harvest.	Old Growth C1, Dedicated Old Growth — Acres proposed to minimum level management prescriptions C2, Managed Old Growth — Existing, plus second growth stands were allocated to prescriptions with long rotations (210 years for pine and associated, 120 years for lodgepole).	Many habitat improvement structures planned See Appendix A of the Plan for constant activity levels.

TABLE E-2 (Cont.)
SUMMARY OF MITIGATIONS - UMATILLA NATIONAL FOREST

Part 3 of 7

Resource Element	Adverse Environmental Effect as Defined by the ICO's	Forest-wide Standards & Guidelines Designed to Mitigate Adverse Environmental Effects	Type of Mitigation	Management Areas (MA's) Which Provide Mitigation Standards & Guidelines	FORPLAN Modeling Constraint	Resource Activity Scheduling
BIG GAME — *Deer/Elk*	High population levels of big *game produced* by providing "optimum" levels of cover and forage, along with a low density of open roads, can *reduce timber opportunities*, recreation activities, and livestock production.	WLDLF Big Game REC Dispersed RGE TBR GEN	A, B, D	Timber harvest is scheduled and cover, forage, and roads are not "optimum," MA's A3, A4, A5, A7 (Scenic & Recreational), A10, C2, C7, E1, E2, & F3	Areas emphasizing other resource values may be constrained (dispersion, visual and others) to meet those objectives	Planned projects include structural habitat improvement and prescribed burning See Appendix A of the Plan and MA prescriptions
	On private lands adjacent to the Forest, elk and deer numbers on winter ranges during the winter (or year-round), can compete with cattle for forage, eat agricultural crops, damage property, and affect the viability of ranching operations	*WLDLF Big Game* RGE Allot Mgmt Plan	A, D, B A	Winter range pressure is alleviated (to some degree) with MA's C3, C3A, C8, and others	Winter Range — C3. See description Walla Walla Watershed — F4 and others. No scheduled harvest in winter range. No scheduled timber harvesting in C3A and C8 MA's.	Winter Range — Enhancement by prescribed burning Also Allotment plan review and revision See Appendix A of the Plan.
RIPARIAN	Development of activities in riparian areas can have a pronounced detrimental effects on the riparian dependent values, including streambank stability, water quality, and instream and streamside habitat.	*RIP/FISH All* (including Fish Programs) WATER All	A,B,D,C B, D, C	MA's *requiring additional* protection for Fish Habitat/Riparian areas A7, C5, C6, C7, F2, F4, and F4A	Riparian Regeneration Harvest - C5, C6, & C7. Wild & Scenic River, A7. *Other areas allocated to* visual management prescriptions.	Riparian/Fish Habitat Inventories Riparian Regeneration Harvest — C5, C6, C7. Range Allotment Planning including riparian areas (See Appendix A.)
FISH	Some forest uses have disturbed and disrupted fish spawning areas Pollution, sedimentation, increased water temperatures, and stream blockages have *adversely affected* fish habitat on some of the Forest streams	RIP/FISH All WATER Protection	A,B,D,C B,C,D	MA's which have the potential to produce high levels of anadromous fish habitat — A7, B1, C5, C6, C7, F4, F4A, and some others without scheduled harvest.	Anadromous fish enhancement level fixed at appropriate level to meet the alternative objective	Fish habitat improvements planned See Appendix A of Plan

TABLE E-2 (Cont.)
SUMMARY OF MITIGATIONS - UMATILLA NATIONAL FOREST

Part 4 of 7

Resource Element	Adverse Environmental Effect as Defined by the ICO's	Forest-wide Standards & Guidelines Designed to Mitigate Adverse Environmental Effects	Type of Mitigation	Management Areas (MA's) Which Provide Mitigation Standards & Guidelines	FORPLAN Modeling Constraint	Resource Activity Scheduling
RANGE	Meeting potentially high livestock demand would reduce big game populations significantly and not meet the public demand for high numbers of huntable animals But, increasing big game populations significantly would essentially eliminate livestock grazing on the Forest	WLDLF Big Game RANGE General	A,B,D	MA's providing high potential population levels of big game – C3, C3A, C5, & C8. MA's emphasizing forage production E1, E2, C3, C3A	Winter Range – C3 10 percent satisfactory cover levels are retained Forage production and allocation by managment area	Annual Operating Plans Schedule, livestock distribution and use patterns. Also Range allotment plan updates as per Appendix A of the Plan Prescribed burning on big game winter ranges.
TIMBER	Development of land for timber management will reduce or eliminate its ability to produce mature-old growth forest wildlife habitat, unroaded recreation areas, and research natural areas	WLDLF/OG All ECO 4, 5 TBR/GEN 1	A, B D	Timber harvest is scheduled, and old growth tree habitat is provided in MA's A7 (Scenic & Recreational), C2, C7, E1, E2 Research Natural Areas are provided in MA D2 Unroaded recreation is provided in MA's A1, A2, A7 (Wild), A8, C1, C8, D2, F2, & F4 (part)	None	See 10-year timber action plan (Appendix A of the Plan)
	The level of timber production, firewood cutting, and insect and disease control activities directly affect wildlife species dependent on dead tree (snag) habitat	WLDLF Old Growth WLDLF Dead & Down WLDLF Nongame ECOSYSTEMS All TIMBER Silv Systems Diversity	A, B, D, C	Timber harvesting is permitted on a scheduled basis and dead tree habitat (snags) is retained in all MA's	Two snag levels applied Deductions for future snags	Governed by 10-year timber sale action plan and by the various habitat improvement projects previously mentioned

TABLE E-2 (Cont.)
SUMMARY OF MITIGATIONS - UMATILLA NATIONAL FOREST

Resource Element	Adverse Environmental Effect as Defined by the ICO's	Forest-wide Standards & Guidelines Designed to Mitigate Adverse Environmental Effects	Type of Mitigation	Management Areas (MA's) Which Provide Mitigation Standards & Guidelines	FORPLAN Modeling Constraint	Resource Activity Scheduling
Timber (Cont.)	Managing for fish habitat, mature-old growth forest wildlife habitat, unroaded recreation areas, other special areas and/or Research Natural Areas, riparian areas, or visual corridors, all reduce the number of timber management acres and wood fiber yields.	TIMBER/GEN 2	A	Timber harvest is permitted on a scheduled basis in MA's A3, A4, A5, A7 (Part) A10, C2, C3, C4, C5, C6, C7, D1, E1, E2, F1, F3, & F4 (limited)	Nondeclining Yield Sequential Bounds — Forest Perpetual Timber Harvest Sustained-Yield Link Sequential Bounds — District Allocation of 2-Story Stands Genetics Program Harvest Dispersion Factor Timber Harvest Ceiling	Governed by nondeclining yield guarantee and management strategies.
	The interactions of timber management methods, such as clearcutting, slash cleanup, reforestation, chemical use and pest management, with other resources all have a potential to adversely impact other resources	TIMBER Silv Systems TIMBER Reforestation TIMBER Diversity FIRE Fuels Pest Management — All	A, B, D C,	Uneven-aged management encouraged and clearcutting is reduced in MA's A3, A4, A5, A7, A10, C3, and C5 Timber management methods are controlled by standards and guidelines in MA's for — Reforestation — Slash cleanup, pest management, use of chemicals	Harvest Dispersion	Governed by the individual resource schedules
WATER AND SOIL	The demand for water exceeds available supplies and is expected to increase significantly by the year 2000.	WATER All	A,B,D,C	All MA's require at least the Soil and Water S&G's. Mill Creek protection in MA F1 and F2 All MA's having scheduled timber harvest	13 Mill Creek Watershed — F1 & F2. Controls on rates of harvest and allocation to timber management prescriptions	Watershed improvement and maintenance See Appendix A of the Plan.

TABLE E-2 (Cont.)
SUMMARY OF MITIGATIONS - UMATILLA NATIONAL FOREST

Part 6 of 7

Resource Element	Adverse Environmental Effect as Defined by the ICO's	Forest-wide Standards & Guidelines Designed to Mitigate Adverse Environmental Effects	Type of Mitigation	Management Areas (MA's) Which Provide Mitigation Standards & Guidelines	FORPLAN Modeling Constraint	Resource Activity Scheduling
WATER AND SOIL (Cont)	Overall water quality may be reduced to minimum, long-term, state standards by increasing sedimentation, temperature, and water pollution as a result of increasing resource outputs such as timber harvest and associated road building, grazing, dispersed recreation, developed recreation at water related sites, and mining.	W/S Goals WATER All RIP/FISH All RGE Allot Plans SOIL All	A, B, D, C	All MA's require at least the Soil and Water Standards and Guidelines Controls on harvest in MA's C5, C6, C7, and others with riparian areas but without harvest.		Soil administration and inventory Resource monitoring and stream inventory ongoing See Appendix A of the Plan
	Resource management, principally ground disturbing activities, can adversely affect soil productivity.	SOIL All	B,D	All MA's require at least the Soil and Water Standards and Guidelines.	None	
MINERALS AND ENERGY	The exploration and development of mineral resources can have an adverse impact on water quality, fish, and riparian habitat.	SOIL All WATER All RIP/FISH General M/E – MNRL and Non-energy MNRL	B, D, C	All MA's require at least the Minerals Standards and Guidelines	None	As per MA standards and guidelines.
TRANSPORTATION	The development of the road system can adversely affect a variety of resources (soils, water quality, fish, wildlife habitat, semi-primitive recreation, and trails)	TRANS All WATER All SOIL All WLDLF Goal RIP/FISH General REC Dispersed Rec	A, B, D	Facilities Management S&G's are required in MA's Management areas permitting roads, but with controlled development – A3, A4, A5, A7 (part), A9, A10, C1, C2, C3, C4, C5, C6, C7, C8, F1, F3, F4, & F4A	None	Review and updates of Motorized Access and Trail Mgmt. plan. See Appendix A of the Forest Plan

TABLE E-2 (Cont.)
SUMMARY OF MITIGATIONS - UMATILLA NATIONAL FOREST

Resource Element	Adverse Environmental Effect as Defined by the ICO's	Forest-wide Standards & Guidelines Designed to Mitigate Adverse Environmental Effects	Type of Mitigation	Management Areas (MA's) Which Provide Mitigation Standards & Guidelines	FORPLAN Modeling Constraint	Resource Activity Scheduling
TRANSPORTATION (Cont.)	Open roads degrade big game habitat conditions and adversely impact populations and some recreation opportunities	TRANS/Road Close WLDLF Big Game REC Dispersed Rec	A	MA's prescribing road closures — A10, C3, C3A, C4, C7, C8, & E2	None	Motorized Access and Travel Management Plan required by Districts Will identify roads to be closed.
CULTURAL RESOURCES	Known prehistoric and historic cultural resource sites must be monitored periodically to deter illegal artifact collecting and vandalism	CR All	A,B,C,D	S&G's for Cultural Resource Management required in all MA's	None	Annual update of Forest Cultural Resource Inventory Plan. Monitoring of known sites
	Various activities OHV, mining, and especially timber production, may adversely affect unknown or uninventoried cultural sites	CR/Inv — All				
PEST MANAGEMENT	Various forest stand treatments can create conditions favorable for noxious weeds and other pests, adversely impacting other resources	Timber Pest Management Ecosystems	A, D, C	S&G's for Pest Management required in each MA	None	Forest Pest Mgmt. Plan Integrated Pest Mgmt. Scheduling variable — see Appendix A of the Plan
	Harvesting the dead trees and reducing the fire hazard from catastrophic pest epidemics can adversly impact big game cover, recreation and visual opportunities, and other resource objectives	FIRE Fuel Mgmt WLDLF Big Game REC General REC Visual	B, C, D	Management areas permit harvest where catastrophic conditions occur and long-term benefits can be gained by harvest.	None	Refer to scheduling for the various individual resources
ECONOMIC AND SOCIAL	Major reduction in the use of wood fiber, range forage, quality water, and recreation opportunities provided by the Forest can affect economic activity by reducing jobs and income, which influences social stability, social well-being, and local government financing.	TBR General RGE All W/S All REC All Community Development All	A, B	None	None	See Appendix A — Itemized Forest Plan Budget 10-year Timber Management Action Plan and Range Allotment planning process

TABLE E-3
SUMMARY OF MANAGEMENT AREA ACREAGES BY ALTERNATIVE
GROSS AREA[1] (THOUSANDS OF ACRES)
Umatilla National Forest

MANAGE-MENT AREAS	PURPOSE	ALTERNATIVE[2] I	Current Direction A	H/M	G	Preferred F/M	D	J	E/M
A1	Nonmotorized Dispersed Recreation	0 0	1.1	27 8	12 6	27 3	71 1	37.3	197 6
A2	OHV Recreation	0 0	5 9	0.0	6.9	7 5	79.6	166 9	67.7
A3	Viewshed 1	21 2	17 1	19.0	33.5	43 7	71.7	85 3	91.9
A4	Viewshed 2	0 0	104 9	30.4	32 0	28.7	28 7	179 4	147 0
A5	Roaded Natural	0.0	2.9	0 0	0 0	4.7	0 0	98 5	98.0
A6	Developed Recreation[3]	4.4	4.4	4 4	4 4	4 4	4 4	4 4	4.4
A7	Wild & Scenic River	7 6	7 6	7.6	7.6	7 6	7 6	7 6	7.6
A8	Scenic Area	0 0	17 8	0.0	0 0	31 4	0 0	22 5	9.0
A9	Special Interest Area	2.1	2.1	2.1	2 1	3 2	2 1	2.5	2 5
A10	Special Management Area	0 0	15 5	3 5	20 1	3 3	0 0	0 0	0 0
B1	Wilderness[3]	304 4	304 4	304 4	304.4	304 4	304 4	304.4	304 4
C1	Dedicated Old Growth	32 2	0 0	31 2	24 1	41 2	74 1	51 8	83.5
C2	Managed Old Growth	3.1	34.3	3 1	3.1	3 6	3 1	3 1	3.1
C3	Big Game Winter Range	48 0	177 3	141.2	120 6	152 8	163 1	160 4	131.1
C3A	Sensitive Big Game Winter Range	0 0	0 0	0 0	0 0	8 2	0 0	0 0	0 0
C4	Wildlife Habitat	0 0	366 7	265 1	676 6	258 9	526 9	106 9	335 8
C5	Riparian/Wildlife	0 0	0 0	30 8	35 5	27 2	28 4	11 1	17.8
C6	Riparian/Fish	52 1	0.0	13 6	0.0	0 0	0.0	0 0	0.0
C7	Fish Management	0 0	0 0	0 0	0.0	105 3	117 0	0 0	6 0
C8	Grass-Tree Mosaic (GTM)	0 0	0.0	0 0	161 8	98.5	0 0	0.0	0 0
D1	Forage/Livestock	208 1	0 0	94 0	0 0	0 0	0 0	0 0	0 0
D2	Research Natural Area (RNA)[4]	2 8	2 8	1.6	1 6	1.6	1 6	2 8	2.8
E1	Timber/Forage	802 4	423 1	472 4	0 0	91 4	0 0	265.3	0 0
E2	Timber/Big Game	0 0	0.0	0 0	0 0	199 5	0 0	0.0	0.0
F1	Mill Creek Limited Development	21.8	22 4	0 0	0.0	0 0	0 0	0.0	0 0
F2	Mill Creek Undeveloped	0 0	0 0	21 5	26 7	20 8	26 4	0 0	0 0
F3	High Ridge Evaluation Area[5]	0 9	0 9	0.9	0 9	0.9	0 9	0 9	0 9
F4	Walla Walla River	0 0	0 0	0 0	0.0	35 0	0 0	0 0	0 0
F4A	Walla Walla River[5]	0.0	0.0	36 6	36 6	0 0	0.0	0 0	0 0

[1] Includes 108,645 acres of private land (7 2% of the gross area on the Forest)
[2] Alternatives in order of decreasing vegetation management.
[3] Constants for all alternatives
[4] Actual RNA acreage is larger, but some is included in other management areas
[5] F5 considered but not used in any alternative (see following section)

MODELING CONSTRAINTS OF THE FORPLAN MODEL FOR THE UMATILLA NATIONAL FOREST

MITIGATION MEASURES NEEDED OR BUILT INTO ALL ALTERNATIVES (40 CFR 1502.12(f))

Item 2 — *Ending Inventory Constraint*: This constraint guarantees that there exists sufficient standing volume at the end of the planning horizon such that the harvest pattern established in this run could continue into perpetuity.

Item 3 — *Sustained-yield Link*: This constraint restricts total harvest volume in the 15th decade to less than or equal to the long run sustained-yield capacity calculated for this specific run.

Item 4 — *Sequential Bounds on Timber Harvest by Ranger District*: This is a constraint to ensure technical implementability. A harvest flow constraint was placed on each ranger district in order to simulate more realistic harvest levels through time. Earlier runs contained wide fluctuations in harvest levels. Timber harvest volumes on each district were allowed to increase or decrease by a maximum of 25 percent from one decade to the next.

Item 5 — *Restrictions on Two-storied Stand Management*: This is a constraint to ensure technical implementability. These constraints are designed to control the allocation of two-storied stands to intensive management prescriptions. This allocation is limited to a maximum of 20 percent of all two-storied stands in the north and south associated working groups. This percentage is based on silvicultural experience with certain plant community types; however, the location of the stands is not mapped.

MITIGATION MEASURES BUILT INTO SPECIFIC ALTERNATIVES (40 CFR 1502.14(f))

Item 1 — *Nondeclining Flow for Timber Harvest Volume*: This constraint ensures that total harvest in each decade will be greater than or equal to the total harvest of the previous decade.

Item 1a — *Sequential Bounds of 25 Percent on Forest-wide Harvest Volume*: This constraint allows timber harvest volumes to increase or decrease by a maximum of 25 percent between consecutive decades. This allows a departure from the Forest Service policy of nondeclining flow.

Item 6 — *Genetics Program Requirements*: Prescriptions were constrained to ensure that 60 percent of the regenerated acres each decade were planned, and 40 percent were regenerated by natural means.

Item 7a — *Harvest Dispersion Factor*: This is a management requirement. For each allocation zone, a harvest dispersion factor of 30 percent was applied to ensure that a maximum harvest unit size of 40 acres would not be exceeded. In addition, this constraint was intended to control any negative cumulative effects within a given watershed or sub-watershed.

Item 7b — *Harvest Dispersion Factor*. For those allocation zones which were allocated to strategy C7 for an alternative, the dispersion requirements were increased to 12.5 percent maximum per decade. The constraint was needed to ensure that not more than 25 percent of each watershed was in a 0-20 age class in each decade.

Item 7c — *Harvest Dispersion Factors*: For allocation zones containing a majority of C4 and/or C3 allocations, the harvest dispersion requirement was 25 percent maximum per decade.

Item 8a

Managed Old Growth Strategy C2. This is a discretionary constraint. The constraints are designed to provide for current habitat requirements for northern three-toed woodpeckers, pileated woodpeckers, and pine martens.

Current unit plans require 5 percent of the tentatively suitable lands be managed as old growth in LMA's 1, 3, 3A, 6, 6A, 8A, 11, 17, 23, 25, TR, and WG. Within LMA's 1 and 17, it was assumed a visual allocation would provide managed old growth; therefore, credit was taken for this overlap. For each district, the acres of "suitable" lands which fell within the remaining LMA's were totaled and a 5 percent proportion was derived for each working group. The constraint used required that a specified minimum number of acres within certain age classes be present in each decade of the planning horizon.

Item 8b

Old Growth - MR – Five Mile Distribution Lodgepole pine is modeled on a managed old growth strategy. The constraints provide for minimum level management requirements for a total of 58 pairs of northern three-toed woodpeckers. In each decade there must be no less than 3,150 acres outside of wilderness in the 0-40 year age class and 3,150 in the 41 year plus age class Forest-wide.

Associated Species Dedicated Old Growth: These constraints are used to provide for minimum level management requirements for 120 pairs of pileated woodpeckers and 98 pairs of pine martens in pine and pine associated stands The required number of acres are allocated to a minimum management prescription level

Item 8c

Associated Species Dedicated Old Growth – Strategy C1: This allocation is at the maximum level. All existing inventoried old growth is allocated to a minimum level management prescription in this alternative which meets a 2.0-mile distribution criteria.

Item 8d

Associated Species Dedicated Old Growth – Strategy C1: Enough old growth is allocated to a minimum level management prescription to meet a 3-mile distribution criteria in this alternative.

Item 9a

All Riparian Areas to Strategy C5: The riparian area prescriptions within the model included a minimum level prescription plus uneven-aged management. The timber prescription reflected yield reductions within an average 50 feet zone on either side of the actual streams This reduction accounts for limited harvesting in order to meet requirements for water quality and stream shading for fish habitat.

Item 9b

Riparian Strategy C5 and Strategy C7: In addition to the same prescription constraints as Item 9a, an additional constraint was applied which placed a ceiling on the amount of regeneration harvesting which could be scheduled in riparian areas within any one decade (a maximum of 5 percent of the total acreage within a specific district).

All riparian areas which fell within an allocation zone proposed to strategy C7 were fixed to a minimum level management prescription with no scheduled timber harvesting.

Item 10a

Visual Management Strategies A3 and A4: These are discretionary constraints. The constraints were designed to ensure that the current visual quality objectives are met through an allocation to uneven-aged timber management prescription. Included in these constraints are those acres found in LMA 1, Resource Production-Visuals; LMA 17, Regulated Recreation; and all mapped areas with a VQO of retention or partial retention. The constraints are district-wide by individual working group and are not applied to specific analysis areas

In addition, controls were used which restricted the amount of these areas which could be regenerated in any given decade to a maximum of 5 percent of the total area in each ranger district. Old growth units which fell within the viewsheds were accounted for under the dedicated old growth constraint and were, therefore, subtracted from the visual constraints to avoid double counting

Item 11a — *Roadless Areas (LMA 16 - Backcountry)*: All acres which fell within this allocation were forced to a minimum level management prescription through the allocation zone choices. This included the Wenaha River Canyon outside the wilderness and the South Fork of the Walla Walla River Trail.

Item 11b — *Roadless Areas — Strategies A1, A2, A7, A8, C8, F2, and F4*: These are discretionary constraints. Some roadless areas were allocated to minimum level prescriptions to simulate a roadless area allocation.

Item 12a — *Winter Range - MR — 10 Percent Satisfactory Cover*: This is a discretionary constraint and is designed to maintain no less than 10 percent satisfactory cover in each winter range. Only winter ranges with more cover than necessary to meet objectives were available for harvest.

Item 13a — *Mill Creek Watershed — Strategy F1 (LMA 23)*: For this allocation, no timber harvesting was scheduled on any analysis area over 30 percent in slope.

Item 13b — *Mill Creek Watershed — Strategy F2*: For this allocation, no timber harvesting was scheduled.

Item 14 — *Strategy A6 (LMA 12 Prime Recreation)*: All ACS lands which fell within the Olive Lake Doughnut Area or the Thomas Creek Corridor were allocated to minimum management levels.

Item 15a — *Anadromous Fish Intensity Level 3*: This is the lowest intensity level for anadromous fish enhancements.

Item 15b — *Anadromous Fish Enhancement Level 4*: This is a moderately low level of anadromous fish habitat improvement. It is estimated to be lower than current plans.

Item 15c — *Anadromous Fish Enhancement Level 5*: This is a moderate level of anadromous fish enhancement.

Item 15d — *Anadromous Fish Enhancement Level 6* This is a moderately high level of habitat improvement for anadromous fish; slightly above current levels.

Item 15e — *Anadromous Fish Intensity Level 7*: This is a moderately high intensity level for anadromous fish management.

Item 15f — *Anadromous Fish Intensity Level 8*: This is the highest intensity level of any alternative.

Item 16a — *Specific Forage Allocations*: The following forage allocations were used to estimate the current situation for livestock use.

	$/AUM	Livestock/Big Game Forage Split
Wilderness	7.34	20/80
Winter Range	5 40	20/80
Riparian	7.34	30/70
Viewsheds	7.34	30/70
All Other Suitable	4.97	40/60
Nonsuitable *High Intensity	4.85	60/40
*Low Intensity	5.44	30/70

Item 16b *Specific Forage Allocations*: The following forage allocations were used to estimate current situation for livestock use.

	Cost/AUM	Livestock/Big Game Forage Split
Wilderness	7.34	20/80
Riparian	7.34	30/70
Viewsheds	7.34	30/70
Other Suitable Land	4.97	60/40
Nonsuitable Land *Low Intensity	5.44	60/40
*High Intensity	4.85	60/40

Item 16c *Forage Allocations*: The following forage allocations were used to estimate current situation for livestock use.

	$/AUM	Livestock/Big Game Forage Split
Wilderness	7.34	20/80
Winter Range	5.40	20/80
Riparian	7.34	30/70
Viewsheds	7.34	30/70
Other Suitable	4 97	40/60
Nonsuitable *Low Intensity	4 97	40/60
*High Intensity	4.97	40/60

Item 16d *Forage Allocations*: The following forage allocations were used to estimate the permitted animal unit month's for this alternative. The factors used in the FORPLAN model do not affect the solution (i e., allocation and scheduling).

	$/AUM	Livestock/Big Game Forage Split
Wilderness	7 34	20/80
Winter Range	5 40	20/80
Riparian	7 34	30/70
Viewsheds	7.34	30/70
All Other Suitable	5 44	40/60
Nonsuitable	5.44	40/60

Item 16e *Forage Allocations*: The following forage allocations were used to estimate the permitted animal unit month's for this alternative. The factors used in the FORPLAN model do not affect the solution (i.e., allocation and scheduling).

	$/AUM	Livestock/Big Game Forage Split
Wilderness	7.34	20/80
Winter Range	5.40	20/80
Riparian	7.34	30/70
Viewsheds	7.34	30/70
All Other Suitable	5.44	55/45
Nonsuitable	5.44	60/40

Item 16f — *Forage Allocations*: The following forage allocations were used to estimate the permitted animal unit month's for this alternative. The factors used in the FORPLAN model do not affect the solution (i.e., allocation and scheduling).

	$/AUM	Livestock/Big Game Forage Split
Wilderness	7.34	20/80
Winter Range	5.40	20/80
Riparian	7.34	30/70
Viewsheds	7.34	30/70
General Forest	5.44	30/70
Nonsuitable	5.44	30/70

Item 16g — *Forage Allocations*: The following forage allocations were used to estimate the current situation for livestock use.

	$/AUM	Livestock/Big Game Forage Split
Wilderness	7.34	20/80
Winter Range	5.44	30/70
Riparian	7.34	30/70
Viewsheds	7.34	30/70
Other Suitable Land	4.97	40/60
Nonsuitable *Low Intensity	5.44	30/70
*High Intensity	4.85	60/40

Item 17a — *Adjustments to Fixed Costs*: No adjustments to current budget items were made for this alternative.

Item 17b — *Adjustments to Fixed Costs*: Adjustments vary by alternative.

Item 18 — *Timber Harvest Ceiling on Allowable Sale Quantity*: The current Timber Management Plan (circa 1963) calls for a maximum allowable sale quantity on green volume of 133 MMBF/year. This figure has been adjusted for additional acreage removed from the suitable land base due to wilderness allocations in 1979 (Wenaha-Tucannon) and in 1984 (North Fork John Day and North Fork Umatilla). This constraint was used for all decades in the plan horizon.

Item 19 — *Walla Walla Watershed to Strategy F4*: No scheduled timber harvesting will be permitted on GTM lands, riparian areas, and winter range. All remaining areas within these zones have dispersion requirements of 25 percent maximum regeneration per decade.

Item 20 — *Wild and Scenic River Designation*: No special constraints were added to the FORPLAN model for this allocation because the entire Grande Ronde area was allocated to a roadless area strategy and the John Day River outside the wilderness was allocated to visual management prescriptions.

Item 21 — *Allocations to Strategy C8-No Scheduled GTM Harvests*: No timber harvests were scheduled within areas classified as GTM.

Item 22 — *Roaded Natural Strategy A5*· Several areas which abut the wilderness areas and all areas in Columbia County which weren't already allocated to a visual management prescription are proposed to an uneven-aged timber management prescription with extended rotations.

Item 23 — *C4 and E2 Summer Range Constraints on Satisfactory Cover*: Harvest that results in satisfactory cover dropping below 20 percent is not allowed

MODELING CONSTRAINT BY ALTERNATIVE — Table E-4 displays FORPLAN modeling constraints for each of the alternatives

TABLE E-4
MODELING CONSTRAINTS BY ALTERNATIVE [1]

Part 1 of 2

Ref.[2] No	Modeling Constraint	Current Direction A	D	E/M	Preferred F/M	G	H/M	I	J
1	Nondeclining Yield a. Sequential Bounds – Forest	•	•	•	•	•	•	•	•
2	Ending Inventory	•	•	•	•	•	•	•	•
3	Sustained-yield Link	•	•	•	•	•	•	•	•
4	Sequential Bounds – District	•	•	•	•	•	•	•	•
5	Allocation of 2-Story Stands	•	•	•	•	•	•	•	•
6	Planting	•	•	•	•	•	•	•	•
7	Harvest Dispersion Factor a All Strategies – 30% b C7(12 5%), Rest(30%) c C7(12.5%), C3&C4(25%), Remainder(30%)	• •		•	•	•	•	•	•
8	Old Growth a C2(5% of ACS) b MR-LP(5 mi), Assoc (5 mi) c. LP(5 mi.), Associated(2 mi) d LP(5 mi.), Associated(3 mi)	•	• •	•	•	•	•		• •
9	Riparian Reg Harvest a C6(10%) – 5 TM Prescriptions b C5(5%) – 5 TM Prescriptions	•	•	•	•	•	• •	•	•
10	Visual Management Area – Acres a A3(R) + A4(PR)	(26)3,334	(22)2,919	(27)10,993	(23)2,941	(16)2,098	(9)1,667	(4)579	(27)2,605
11	Roadless Areas – Acres a All LMA 16 b A1,A2,A7,A8,C8,F2,F4	(2)4,989	(11)173,227	(22)292,425	(12)174,556	(8)130,488	(5)63,056	(0)	(17)246,241
12	Winter Range MR – 10% Thermal Cover	•	•	•	•	•	•	•	•
13	Mill Creek Watershed a F1 – Limited Harvest b F2 – No Harvest	•	•		•	•	•	•	
14	Prime Recreation (LMA 12)	•							

1 See Modeling Constraints of the Umatilla National Forest FORPLAN Model
2 Used in Table E-2.

TABLE E-4 (Continued)
MODELING CONSTRAINTS BY ALTERNATIVE [1]

Part 2 of 2

Ref [2] No	Modeling Constraint	Current Direction A	D	E/M	Preferred F/M	G	H/M	I	J
15	Anadromous Fish Enhancement								
	a Level 3			•					
	b Level 4								
	c Level 5	•				•	•		
	d Level 6						•		
	e Level 7		•						•
	f Level 8				•				
16.	Forage Allocations								
	a.	•			•				
	b							•	
	c.		•						
	d								
	e								•
	f			•					
	g.					•	•		
17	Fixed Costs and Outputs								
	a Unadjusted	•							
	b Adjusted		•	•	•	•	•	•	•
18	Timber Harvest Ceiling								
	a Current	•							
	b RPA								
19.	Walla Walla Watershed (F4)				•	•	•		
20	Wild & Scenic Rivers								
	a. Grande Ronde (GR) & Tucannon (T)								
	b GR, T, North Fork John Day (NFJD), Wenaha (W)			•					
	c. GR, T, NFJD								•
	d GR, NFJD				•				
21	GTM Harvest (C8)				•	•			
22.	Roaded Natural (A5)			•					•
23	Summer Range (C4)					•			

1 See Modeling Constraints of the Umatilla National Forest FORPLAN Model.
2 Used in Table E-2

BEST MANAGEMENT PRACTICES

INTRODUCTION

Best Management Practices are the primary mechanism to enable the achievement of water quality standards. (Environmental Protection Agency, 1987). BMP's will be selected and tailored for site-specific conditions to arrive at the project-level BMP's for the protection of water quality. The process for determining appropriate BMP's, and for ensuring their implementation at both the Forest Plan and project level, is described. Following is a description of the methods and procedures that will be used to control or prevent nonpoint sources of pollution from resource management activities and to ensure compliance with the:

Clean Water Act of 1972, as amended (1977 and 1987). Section 319 of the Clean Water Act Amendments of 1987 requires that the states determine those waters that will not meet the goals of the Act, to determine those nonpoint source activities that are contributing pollution, and to develop a process of determining BMPs to reduce such pollution to the "maximum extent practicable". This Appendix is designed to fulfill the intent of the requirements of Section 319

Oregon Administrative Rules (Chapter 340-41-001-975). Department of Environmental Quality (DEQ). Oregon's Administrative Rules contain water requirements for the protection of identified beneficial uses of water.

Memorandum of Understanding: The Oregon Department of Environmental Quality and U.S. Department of Agriculture Forest Service (2/12/79 and 12/7/82), and "Attachments A and B" referred to in this MOU (Implementation Plan for Water Quality Planning on National Forest Lands in the Pacific Northwest December 1978, and Best Management Practices for Range and Grazing Activities on Federal Lands, respectively).

Washington Administrative Code (Chapters 173-201 and 202). Department of Ecology (DOE). Washington's Administrative Code contains water requirements for protection of various classes of surface waters.

Memorandum of Understanding: The Washington Department of Ecology and U.S. Department of Agriculture Forest Service (7/79), and "Attachment A" referred to in this MOU (Implementation Plan for Water Quality Planning on National Forest Lands in the Pacific Northwest December 1978).

The EPA has certified the Oregon Forest Practices Act and Washington Forest Practices Rules and Regulations as BMP's. The States of Oregon and Washington compared Forest Service practices with these State practices and concluded that Forest Service practices meet or exceed State requirements. As State practices change, comparisons are made to ascertain that Forest Service practices meet or exceed these changes. Monitoring and evaluation will determine the need for changes in BMP's and/or State standards.

Forest Services management practices will meet, as a minimum, the substantive state BMP requirements, and other considerations required by the National Forest Management Act (NFMA), and other authorities, for the protection of the soil and water resources.

The general BMP's described herein are action-initiating mechanisms which call for the development of detailed, site-specific BMP prescriptions to protect beneficial uses and meet water quality objectives. They are developed as part of the NEPA process, with interdisciplinary involvement by a team of individuals that represent several areas of professional knowledge, learning, and/or skill appropriate for the issues and concerns identified BMP's also include such requirements as Forest Service manual direction, contract provisions, environmental documents, and Forest Plan Standards and Guidelines. Inherent in prescribing project-level management requirements is recognition of specific water quality objectives which BMP's are designed to achieve.

DEFINITIONS

Nonpoint sources refers to diffuse or unconfined sources of pollution where wastes can either enter into, or be conveyed by the movement of water to, public waters (Oregon Water Quality Standards, 340-41-007(17)). Silvicultural sources, such as erosion from a harvest unit or surface erosion from a road, are considered nonpoint sources.

Best Management Practices (BMP's) are defined as "methods, measures, or practices selected by an agency to meet its nonpoint source control needs. BMP's include, but are not limited to, structural and nonstructural controls, operations, and maintenance procedures. BMP's can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters." (40 CFR 130.2, EPA Water Quality Standards Regulation).

Usually BMP's are applied as a system of practices rather than as a single practice. BMP's are selected on the basis of site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility. (EPA Interagency Nonpoint Task Force, 1985).

BMP's are basically a preventative rather than an enforcement system. BMP's are a whole management and planning system in relation to sound water quality goals, including both broad policy and site-specific prescriptions.

BMP IMPLEMENTATION PROCESS

In cooperation with the states, the primary strategy for the prevention and control of nonpoint sources is based on the implementation of BMP's determined necessary for the protection of the identified beneficial uses.

The objective is to identify the most practical means of attaining water quality objectives. Water quality objectives include water quality measures that adequately reflect the needs of identified beneficial uses.

The Forest Service Nonpoint Source Management System consists of:

1. Selection and design of BMP's based on site-specific conditions, technical, economic and institutional feasibility, and the water quality standards of those waters potentially impacted.

2. Implementation and enforcement of BMP's.

3. Monitoring to ensure that practices are correctly applied as designed.

4. Monitoring to determine the effectiveness of practices in meeting design expectations and in attaining water quality standards.

5. Evaluation of monitoring results and mitigation where necessary to minimize impacts from activities where BMP's do not perform as expected.

6. Adjustment of BMP design standards and application when it is found that beneficial uses are not being protected and water quality standards are not being achieved to the desired level. Evaluation of the appropriateness of water quality criteria to reasonably assure protection of beneficial uses. Consideration of recommending adjustment of water quality standards.

BMP Selection and Design – Step 1

Scoping. *Potential concerns are identified, e.g., water quality, as part of the NEPA process for environmental* analysis. Public notices are dispersed inviting comment and participation in the process. Alternatives are developed to address potential problems and to accomplish project objectives.

Environmental Analysis: Each alternative is evaluated for its potential effect on different resources, including water. From this analysis, a preferred alternative is identified, along with the measures (BMP's) needed to reduce risk and increase the potential for success.

Documentation. An Environmental Assessment (EA) or Environmental Impact Statement (EIS) is developed with a decision notice and includes required measures (BMP's).

Water quality standards are used as objectives towards which practices are designed to protect beneficial uses.

Appropriate BMP's are selected for each project by an interdisciplinary team. BMP selection and design are dictated by water quality objectives, soils, topography, geology, vegetation, climate, economics, institutional constraints, etc. Environmental effects and water quality protection options are evaluated and a range of practices is considered. A final set of practices are selected that not only protect beneficial uses, but meet other resource needs. These final selected practices constitute the BMP's.

The selected BMP's, an estimate of their effectiveness, and a plan for monitoring them is included in the project EA or EIS. The site-specific BMP prescriptions are normally included in project implementation plans, but may also be included in the body or appendix of a project environmental document

BMP Implementation and Enforcement – Steps 2 and 3

The site-specific BMP prescriptions are taken from plan-to-ground by a combination of project layout and resource specialists (hydrology, fisheries, soil, geology, etc.). Final adjustments to fit the BMP prescriptions to the site are made before implementing the resource activity.

When the resource activity (e.g., timber harvest or road construction) begins, timber sale administrators, engineering representatives, resource specialists, and others ensure that the BMP's are implemented according to plan. A similar implementation process is used for other resource activities (range management, mining, etc.) on national forests

BMP implementation monitoring is done before, during, and after resource activity implementation This monitoring answers the question: Did we do what we said we were going to do? Some examples of implementation monitoring for a streamside management unit BMP prescription may be:

1. **Before project**· checking Stream Management Units (SMU's) along streams to see if layout meets the objectives of the BMP prescription, or if the road crossing of a stream is properly located and designed per estimates made during the environmental analysis.

2. **During project.** during timber felling, the timber sale administrator checks to see if the timber fallers understand marking prescription for timber to be felled in the SMU. The timber sale administrator also observes on-going harvest operations to see if the activity meets the objectives defined in the project plan.

3. **After project:** measuring canopy stream shading to see if the amount specified in the BMP prescription was retained, or monitoring a beneficial use of the water to determine a change or trend in use.

Enforcement is carried out primarily through internal project reviews and contractual enforcement e.g , timber sale contract, grazing or special use permit, etc.

Contract enforcement is a more formal method used to achieve desired results. Normally, each project is assigned a person as a contracting officer. For timber sales, that person is called a timber sale administrator The project is routinely monitored to ensure that practices are being carried out in the manner and method prescribed in the contract, permit, etc. When a contractor or permittee is not in compliance, they can be held in breech with penalties (e.g , bond forfeiture) until remedies are implemented.

Often during the course of an activity, adjustments are made if it is determined that unsatisfactory results are currently resulting or may occur. This can often mean that a contract modification may be necessary (as in the case of a timber sale).

BMP Monitoring – Step 4

Once BMP's have been implemented, further monitoring is done to evaluate their effectiveness. BMP "effectiveness monitoring" answers the question· Are BMP's effectively meeting management objectives for protection of water quality?

Water quality standards are the "yardstick" against which the effectiveness is tested If, through objective monitoring, BMP's do not meet prescribed objectives, then information is available to modify either the BMP's for future managment, or the objectives, or both.

The natural variability of water quality under unmanaged conditions is an important factor that will be considered during the monitoring and evaluation. Additionally, effectiveness monitoring will include measurement against land management objectives as well as water quality objectives.

Some examples of the types of BMP effectiveness monitoring to be conducted are:

1. Measuring stream temperatures to see if the riparian prescriptions in a watershed are maintaining water temperature.

2. Storm period surveillance monitoring of a road system to see if road rocking is effectively preventing road surface erosion.

The monitoring and evaluation section of the Forest Plan, (Chapter 5), provides that monitoring of BMP's will be accomplished on an appropriate sample basis. Once a specific project is designed, a site-specific monitoring plan may be developed.

Results of monitoring should be shared with state and local agencies as well as available to the public. Monitoring design, sampling, and laboratory analyses will be coordinated.

BMP Evaluation and Adjustment – Step 5 and 6

The technical evaluation/monitoring described above will determine how effectively BMP's protect and/or improve water quality. If the evaluation indicates that water quality objectives are not being met and/or beneficial uses do not appear to be receiving adequate protection, corrective action will consider the following three components:

1. **The BMP:** Is it technically sound? Is it really best, or is there a better practice which is technically sound and feasible to implement?

2. **The implementation program or processes:** Was the BMP applied entirely as designed? Was it only partially implemented? Were personnel, equipment, funds, or training lacking which resulted in inadequate or incomplete implementation?

3. **The water quality standards:** The water quality standards are established to protect the beneficial uses of water. They include numeric and narrative criteria that, when exceeeded, are assumed to indicate detrimental impacts on beneficial uses. They are intended to provide a benchmark for evaluating harm to beneficial uses.

Assessing the applicability of the standards is a responsibility of the states. The Forest Service will provide information to the states to address the following types of questions.

Do the standards describe the conditions necessary for protecting beneficial uses?

Are standards higher or lower than that necessary for protecting beneficial uses?
Do the standards reflect the natural variability occuring within the natural and human-affected ecosystem?

Do the parameters and criteria that constitute water quality standards adequately reflect (are they sensitive enough) human-induced changes to water quality and beneficial uses?

"Validation" monitoring may be needed to make this assessment. The purpose of validation monitoring is to answer the question whether standards, coefficients, requirements, and guidelines are appropriate to meet objectives, e.g., protect beneficial uses.

Examples:
(1) Did the change in water temperature impact the fish population?
(2) Did the soil compaction effect tree growth?

Validation Monitoring will need to be closely coordinated with or, in some cases, conducted by research. It may require the establishment of permanent plots or administrative studies This kind of monitoring will be very limited and will require coordination to select projects with broad application and to prevent duplication. Only those coefficients and standards that are not reasonably validated by existing research or documentation should be candidates for this monitoring.

Corrective action may be initiated once the reason for failing to achieve the management objectives is determined. The management practice may have to be changed, the water quality objectives modified, or both.

Training

National Forest personnel involved with project location, design, layout, administration, and maintenance activities will receive BMP training. The training will consist of BMP awareness, as well as on the more technical aspects such as planning, implementation, monitoring, and evaluation.

General Best Management Practices and Examples

Individual, general Best Management Practices are described in *General Water Quality Best Management Practices*, Pacific Northwest Region, November 1988. This provides guidance, but is not a direction document. Also included in this document is a description of the process, and limitations and use of these BMP's. Each BMP listed includes the Title, Objectives, Explanation, Implementation and Responsibility, and Monitoring. Evaluations of ability to implement and estimated effectiveness are made at the project level

Not all of the general BMP's listed will normally apply to a given project, and there may be specific BMP's which are not represented by a general BMP in this document The sensitivity of the project determines whether the site-specific BMP prescriptions are included in the EA/EIS or in the sale/project plan, or in the analysis files.

Following is an example of a general BMP, as described in this document, along with an example of a site-specific BMP which is developed at the project level

Examples

General BMP

T-5. Title. *Limiting the Operating Period of Timber Sale Activities*

Objective: To ensure that the Purchaser conducts operations in a timely manner, within the time period specified in the Timber Sale Contract (TSC).

Explanation. The TSC specifies a Normal Operating Season, during which, operations may generally proceed without resource damage. Operations are permitted outside the Normal Operating Season only when they can be conducted without damage to soil, water, and other resources. Where determined to be necessary through the environmental analysis, the TSC will limit operations to specific periods or weather conditions. Operations are not permitted to continue if damage will occur.

Implementation & Responsibility: Limited operating periods are identified and recommended during the Timber Sale Planning Process by the interdisciplinary team and followed through the life of the timber sale primarily by the Sale Administrator.

Ability to Implement: Add at project level.

Effectiveness: Add at project level.

Monitoring: During implementation of timber sale activities by the Sale Administrator, Forest Service Representative (FSR), engineers, and watershed specialists.

Specific BMP

PT-5. Title. Limiting the Operating Period of Timber Sale Activities

Objective: To ensure that the Purchaser conducts operations in a timely manner, within the time period specified in the Timber Sale Contract (TSC).

Explanation: The Ship Mountain Timber sale contains sensitive soils that are subject to soil compaction during tractor skidding, and a non-surfaced road that is not suitable for wet weather haul.

The normal operating season for the Forest will be enforced for the Ship Mountain Timber sale. All operations off road FR 10 (non-surfaced) will be halted at the onset of wet weather to prevent erosion and damage to the road. Tractor skidding on units 1-5 will be restricted if soil moisture is above the level established by the soil scientist. Other operations can continue outside the normal operating season if they can be conducted without damage to soil, water, and other resources.

Implementation and responsibility: For the Ship Mountain Timber sale the normal operating season for the Forest will be enforced. All operations off road FR 10 (non-surfaced) will be halted at the onset of wet weather to prevent erosion and damage to the road. Other operations can continue outside the normal operating season if they can be conducted without damage to soil, water, and other resources. The Forest watershed specialists will work with the timber sale administrators to evaluate the potential for resource damage if operating outside the normal operating season

Ability to Implement: High

Effectiveness: High

Monitoring: During implementation of timber sale activities by the Sale Administrator, Forest Service Representative (FSR), engineers, and watershed specialists.

MITIGATION MEASURES AND VEGETATION MANAGEMENT METHODS

This section presents the mitigation measures used to avoid or reduce potential environmental impacts. They are presented in the context of the five "methods" used to manage competing and unwanted vegetation.

The five general methods of managing competing and unwanted vegetation are

1. Biological/cultural/grazing – the use of pathogens, insects, plants, or animals for control;

2. prescribed burning – the managed use of fire;

3. manual – the use of hand-held tools (includes power tools),

4. mechanical – the use of tractors or other large machines; and

5. herbicides – the use of herbicides (aerial and ground).

Mitigation measures are designed to reduce, avoid, minimize, rectify, or compensate for impacts on the environment which might result from vegetation management activities. The mitigation measures incorporated here draw from the existing direction found in Forest Service manuals and land and resource management plans, information in the research literature, and the accumulated field experience of Forest Service professionals.

Several mitigation measures will apply regardless of the vegetation management method employed. These common mitigation measures are listed below

Most mitigation measures, however, are applicable to a specific method, and are presented by relevant method.

Mitigation measures for the use of fire and herbicides are more numerous and detailed than for the other methods This is due to the public interest directed toward these methods during the development of the EIS for *Managing Competing and Unwanted Vegetation*.

Prescribed fire and herbicides are used in managing national forest lands and resources only as ways to control competing and unwanted vegetation Manual, mechanical, and biological methods are used in other activities including timber harvest, road construction and fire fighting Direction governing use of these methods in these other activities apply when they are employed for managing competing and unwanted vegetation. Refer to the EIS for complete discussions and directions.

MITIGATION MEASURES COMMON TO ALL METHODS

The following mitigation measures will be applicable to all methods of managing competing and unwanted vegetation.

The first three measures apply to silvicultural activities (site preparation for planting and conifer release from competing plants).

Silvicultural activities will employ the following mitigation measures for all methods.

1 A documented prescription will be prepared or approved by a certified silviculturist. Diagnosis and prescription will follow direction in Forest Service Handbook (FSH) 2409.26d (Silvicultural Examination and Prescription Handbook) Prescriptions include five elements·

a. Description of physical and environmental conditions;

b. description of biological conditions;

c. statement of management objectives;

d consider treatment alternatives, as well as a recommended treatment, and

e. identify monitoring requirements

Prescriptions should recognize the forest as an ecosystem, be sensitive to the quality of data used, and objectively analyze how well an action would meet management objectives. A no-treatment or deferred action will be considered in all diagnoses.

2. Site-specific diagnosis and analysis will meet standards established in Forest Service Handbook 2409.17, (Silvicultural Practices Handbook). Knowledge and skill levels for certified silviculturists are defined in Chapter 8 of this handbook.

   Standards defined in FSH 2409.17 will be met for project evaluation, implementation, and monitoring.

   Monitoring will be designed to determine whether:

   a. Prescription and management objectives have been met;

   b remedial treatment is necessary; and

   c. findings can be used to strengthen future prescriptions.

3. The Guidance for diagnosis and determination of treatment need which is contained in Forest Service Handbook 2409.26c (Timber Stand Improvement Handbook, Chapter 10) will be consulted. This handbook includes direction for the determination of objectives for vegetative response and the establishment of time frames.

   Evaluations of treatment methods must consider effectiveness, viability, and efficiency. The value of early plant community monitoring and maintenance in order to help reduce the magnitude of future release needs should be recognized.

   Additional mitigation measures will be employed for all management activities.

4. Scoping and environmental analysis will be conducted for each proposed project. This analysis will follow guidance in Forest Service Manual (FSM) 1950 (Environmental Policy and Procedures) and Forest Service Handbook 1909.15 (Environmental Policy and Procedures Handbook).

   Potential adverse effects, including those to soils; long-term productivity; water and air quality; vegetative diversity, wildlife, fish, and threatened, endangered, or sensitive species will be evaluated. The potential for cumulative impacts of past and proposed projects will be considered during Forest or project-level environmental analysis, and will be mitigated where possible.

5. Each project proposal will include a Human Health Risk Management Plan. As appropriate, this may include elements such as:

   a. Project Risk Plan – includes the identification of personal protective equipment, special orientation and training needs, hazard identification, first aid training or supplies, and safety meeting schedule. The basic reference is Forest Service Handbook 6709.11 (Health and Safety Code Handbook). Medical support facilities, as well as accident investigation and reporting responsibilities will be identified.

   b. Environmental Monitoring Plan – includes water monitoring procedures and standards, requirements for notification of adjacent landowners or forest visitors, and record-keeping needs.

c. Spill Incident Response Plan – for projects involving movement or handling of hazardous materials. This plan will identify responsibilities, notification procedures, and containment or cleanup measures

d. Prescribed Burning Plan – states specific, quantifiable effects (duff/litter consumption, plant and debris removal), pre-burn weather and fuel moisture monitoring plan, burn prescription (wind, fuel moisture, etc.), escape contingency suppression plan, required coordination, special smoke management needs, and documentation (monitoring and evaluation) procedures and responsibilities.

e. Herbicide Application Plan – this will identify organization and support needs, calibration procedures, equipment inspection procedures, communications needs, search and rescue procedures, batching procedures, public contact procedures, posting and signing needs, and herbicide accountability standards Special precautions for applicators, mixers, and loaders will also be identified.

The size and complexity of each vegetation management project, along with the specific methods and techniques employed, will define the content of a project Human Health Risk Management Plans The design of every project, however, will consider the health risks for workers and the public, and will identify contingencies in the event of accidents or incidents.

6. Training, direction, and quality control will be provided at all administrative levels – the regional office, national forests, and ranger districts. The purpose is to help project planners, administrators, and managers perform their responsibilities effectively and efficiently. Training and orientation will be used to develop a common understanding of management objectives, restraints and mitigation measures, and concepts necessary for the implementation of the vegetation management program

Forest Pest Management, along with the program managers and staff groups, will be responsible for providing training and monitoring to assure that:

a Project planners and decision-makers will acquire a working knowledge of the process for managing competing vegetation (Chapter II of that EIS); and

b. information exchange takes place when new or modified vegetation techniques, methodologies, or monitoring strategies that show potential for more widespread use are developed.

BIOLOGICAL, CULTURAL, AND GRAZING MITIGATION MEASURES

1. All Forest Service uses of biological control organisms will be in cooperation with the USDA Agricultural Research Service or under individual, approved state programs.

2 Project planners will inform downstream water users who could be directly affected by biological contamination of surface water.

3. Existing direction found in Forest Service Manual 2200 (Range Management) and Forest Service Manual 2500 (Watershed Management) provides for protection of resources during livestock grazing Standards and Guidelines in Forest land management planning documents address local conditions and measures necessary to minimize impacts on soils and vegetation due to trampling by livestock.

Livestock will be strictly controlled in the vicinity of wetlands and riparian areas to prevent trampling and compaction of wet soils, water contamination, and destruction of riparian vegetation and streambanks Specific management direction for protecting riparian areas, wetlands, and threatened, endangered and sensitive plants is found in the applicable land and resource management plans. Management techniques could include fencing, herding, sale distribution, and herd adjustment.

4. The consequences of using genetically adapted seedlings selected for fast, early growth will be evaluated for their long-term effect on the diversity of natural forest and range ecosystems. The evaluation should occur as part of the Regional-level genetics program.

PRESCRIBED BURNING MITIGATION MEASURES

For each project, the Forest Service requires a written, site-specific prescribed burning plan approved by a line officer The purpose of the plan is to ensure that resource management objectives are clearly defined and that the site and environment are not harmed A prescribed burning plan must include:

1. Description of the burn unit and the primary reasons for the burn (site preparation, hazard reduction, deer habitat improvement, etc.);

2. the range of acceptable results expressed in quantifiable terms (reduction of the loading(s) of specific fuel class(es), numbers of planting sites, stimulation of growth of specific food plants, etc.);

3. the burning prescription – includes weather and fuel moisture criteria that will produce the results specified in number 2 above, and fire behavior that will enable the burning crew to maintain control;

4. pre-burn monitoring – describes how and where the fuel moisture and weather conditions will be monitored to determine when they are within prescription, indicates which elements are to be monitored,

5. preparation needed for burning – specifies the location of fire breaks, hose lays, and other tasks required to prepare the site for burning;

6. risk assessment – quantifies the chance of fire escape and the range of possible consequences. Contingency actions to be taken if there is an escape – whom to call, control line location, etc.;

7. provision for pre-burn coordination – notification of regulatory and cooperating agencies and the affected public,

8. smoke management – identifies roads, airports, communities, residences, recreation sites, and scenic areas that must be protected from smoke; specifies procedures and conditions that will protect the environment and the health and interests of the public;

9. safety and protection of improvements and fire-sensitive features – lists health and safety hazards; things, areas, etc. that must be protected;

10. firing, mop-up, and patrol procedures – specifies exactly how the burning will be done, and

11 documentation – includes monitoring of smoke and fire behavior and crew actions during the burn, post burn evaluation of results for comparison with the burn objectives.

In the development of prescribed burn objectives and the burn prescription, special attention is given to the following guidelines to prevent soil damage and degraded water and air quality.

1 Extreme care will be taken to avoid consuming more of the residues and forest floor (litter and duff) than necessary to meet burn objectives This will protect the physical and nutrient properties of the soil. Extreme care will be practiced when burning on steep slopes and on granitic or volcanic soils which are highly erodible

2. An unburned buffer of vegetation along streams will be maintained to protect riparian vegetation and reduce sedimentation. Care will be taken to limit the severity of the burn in and along intermittent streams. Specific directions for protecting riparian areas and threatened, endangered, and sensitive plants are found in the Regional Guide and individual Forest Plans.

3 Protection of visibility in Class I areas and the overall air quality is an important objective. All prescribed burning will be done in accordance with all state and local air-quality regulations. Special care will be taken to prevent smoke from affecting the visibility in Class I areas during periods of high visitor use.

4. Prescribed burning will be planned to avoid smoke intrusion into smoke-sensitive areas identified in the Oregon and Washington smoke management plans.

5. The Forest Service will comply with visibility protection guidelines for Washington's Federal Class I areas during "visibility important days" from July 4—Labor Day in accordance with the Washington Smoke Management Plan.

6 The "best available technology" will be used to reduce smoke, taking into account other land management practices and costs, as determined on a case-by-case basis. The "best available technologies" applicable to prescribed burning include, (but are not limited to:

a. Removing (utilizing) woody material,

b. reducing felling breakage (cable/directional felling),

c. rigorous mop-up of prescribed burns,

d rapid (mass) fire ignition, and

e. burning only during optimum conditions.

7. Vegetation treated with herbicide will not be burned for at least one year.

MANUAL MITIGATION MEASURES

1. When manual methods are considered, an analysis of worker exposure to potential hazards and risks will be made Safety of workers and the potential for serious accidents will be evaluated, and mitigated where practical

2 As with other methods, a Project Risk Plan will be developed Items considered should include (depending on the technique used):

a. Physical dangers (for example, falls, sprains, or danger from snags);

b. exposure to exhaust gases, dust, or temperature extremes;

c. exposure to vapors during mixing of fuels;

d. risks of being cut; and

e. exposure to poisonous plants, snakes, or insects.

MECHANICAL MITIGATION MEASURES

The following are examples of existing Regional direction designed to minimize soil compaction and erosion during the operation of heavy equipment.

1. Tractors (both rubber-tired and crawler) are prohibited on slopes exceeding 35 percent, except at designated locations (approved by a soil or water specialist) where significant, adverse impacts can be avoided.

2. Tractors are prohibited on critical soils, such as those with high compaction potential, except at designated locations (approved by a soil or water specialist) where significant, adverse impacts can be avoided. A minimum of 80 percent of an activity area should be left in a condition of acceptable productivity potential for trees and other managed vegetation (see Forest Service Manual 2520, 9/83 R-6 Supp 45).

3. Tractors are prohibited on soils with high erosion and sedimentation hazard in municipal watersheds

4. Tractors may be limited to operating only during certain periods in order to maintain long-term productivity of forest and range soils. Timing of operations will be based on soil moisture content and soil properties in order to reduce compaction The advice of a soil scientist will be sought in determining limited operating periods.

5 Protective buffer strips along streams, lakes, and wetlands will be maintained to create a filter mat to minimize off-site sedimentation. Interpretations of site-specific conditions by hydrologists or soil scientists will be used to determine the width required to prevent accelerated sedimentation Individual forest land management planning documents specify standards and guidelines for management of riparian areas.

6. Slash created as a result of mechanical methods of vegetation management will not be piled within the zone of high water flow in stream channels.

HERBICIDE MITIGATION MEASURES

The following mitigation measures meet or exceed the intent of state forest practices acts.

1. Down-stream water users and adjacent landowners who could be directly affected by chemical drift, stream transport, or an accidental spill, will be notified (normally 15 days) prior to the chemical application.

2. All applicable state and federal laws, including the labelling instructions of the Environmental Protection Agency, will be strictly followed.

3. The herbicides amitrole, diuron, and fosamine will not be used in the Region's vegetation management program

4 The herbicide dalapon will not be used in roadside vegetation management nor in any other situations where its use could result in exposure to the public either through routine operations or accidents.

5. Female workers (either Forest Service employees or contract workers) will not be used as mixers or loaders in atrazine or bromacil applications.

6 Female workers (either Forest Service employees or contract workers) will not be used in backpack spray or hack-and-squirt operations for 2, 4-D, glyphosate, dicamba, tebuthiuron, triclopyr, simazine, and bromacil.

7. Female workers (either Forest Service employees or contract workers) will not be used in applications of dalapon

8 The herbicide atrazine will not be applied aerially.

9. Diesel oil will not be used in herbicide applications, except as an adjuvent (not to exceed 5 percent of spray mixture).

10. Kerosene will not be used in herbicide applications, except as an inert ingredient in the esther formulation of triclopyr.

11. Herbicides will be applied within the prescribed environmental conditions stated on the label, in the environmental assessment, and in issued permits This includes considerations of wind speed, relative humidity, air temperature, chemical persistence, and time since the last rainfall when determining the timing of application in relation to drift reduction.

12. Use herbicide formulations that contain only inerts recognized as generally safe by EPA, or which are of a low priority for testing by EPA Use of other inerts (identified by EPA as a high priority for testing or those that have been shown to be hazardous) requires full assessment of human health risks incorporated into the NEPA decision-making process.

13. Protective clothing will be worn by all workers (both Forest Service employees and contract workers) involved in herbicide mixing, loading, backpack applications, and hack-and-squirt applications.

14. Public notification will be used for all applications, requesting that people who know or suspect that they are hypersensitive to herbicides contact the Forest Service office proposing the project to determine appropriate risk management measures

15. Workers (both Forest Service and contract) who know that they are hypersensitive to herbicides will not be used for application projects Workers who display symptoms of hypersensitivity to herbicides during application will be removed from the project.

16. Precautions will be taken to assure that equipment used for storage, transport, mixing, or application will not leak herbicides into water or soil.

17. Areas used for mixing herbicides and cleaning equipment shall be located where spillage will not run into surface waters or result in ground water contamination. Whenever practicable, mixing areas and heliports will not be located within domestic or municipal, fish hatchery, or irrigation supply watersheds

18. Drift of herbicide vapors or sprays will be minimized to within the prescribed buffer strip boundaries The goal is to optimize droplet size to meet control requirements and to reduce risk of contamination due to drift. For aerial applications, fine droplets will be kept to a minimum by techniques such as (1) reducing boom pressure, (2) increasing orifice size, (3) orienting nozzles parallel to the ground, (4) using specialized boom and nozzle designs, and (5) thickening the spray mixture by addition of various foaming agents, thickening polymers, or invert emulsion carriers

    Specific direction on drift control measures, calibration, and characterization of aircraft is contained in handbooks such as the Siskiyou National Forest Aerial Applicators Handbook, April 1982; the Gold Beach Ranger District Aerial Implementation Plan, Spring 1983, and the Region 5 Handbook on Aerial Application of Herbicides, June 1983 These are on file in the Regional Office in Portland, Oregon Current technology in aircraft and guidance systems, aerial delivery systems, aerial spray models, aerial calibration, microsite weather, and quality control is provided to Forest Service personnel in training sessions such as the National Pesticide Application Training held in Marana, AZ, Oct. 1986.

19. Buffers are required along streams, open water, and wetlands. The following will be considered as minimum widths, and may need to be expanded depending on local conditions. The buffer width for lakes and wetlands is wider than streams because of the high water table surrounding these areas. Large quantities of herbicides can be flushed by a rise in the water table There is also less opportunity for chemical dilution and mixing in lakes and wetlands than in flowing streams

    For each project involving use of herbicides, buffers will be designed along all stream channels, lakes and wetlands to meet the following objectives. These objectives are based on the possible modes of chemical transport to surface waters (direct application, drift, overland flow, subsurface leaching, and mobilization in ephemeral stream channels), as well as protection of riparian vegetation.

    a. Prevent direct application to open water

        (1) Truck-mounted spray rigs will have an on/off switch inside the vehicle which the driver can operate at stream crossings.

    b. Reduce drift into surface waters to meet project objectives The acceptable amount of drift reaching surface waters will be determined for each proposed project based on the value of the water resources and downstream uses. Operational considerations, including topography, existing vegetation, environmental conditions, and mode of application will be incorporated into the project buffer strips. Buffer strips will be marked prior to spraying to be visible to applicators in aircraft, trucks, or on-the-ground, whichever is applicable As a minimum, the following unsprayed widths will be maintained and may need to be expanded depending on local conditions:

        (1) For aerial application, 200 feet horizontal distance around wetlands and lakes

        (2) For aerial application, 100 feet along all flowing streams (Class I–IV)

        (3) For other than aerial application, 50 feet along all flowing waters A distance less than 50 feet may be considered depending on site-specific factors such as slope, soil, climate, and risk of contamination

    c The following items will be considered in project-level analyses and may result in expansion of the buffer widths to meet project objectives·

(1) The possibility of significant rainfall within the next 60 days, topography adjacent to surface water, soil infiltration capacity, amount of ground cover, flow obstructions that retard overland flow, and herbicide persistence and mobility will be considered. The value of the water resource for fisheries, municipal, domestic, industrial, and irrigation use will be considered.

d. *Reduce the risk of subsurface leaching and mobilization due to a rising water table.*

(1) Considerations include depth of water table, soil permeability, possibility of a rise in the water table, leaching within the 60 days following application, herbicide mobility and persistence, and the downstream water use

e. Minimize chemical introduction to ephemeral streams.

(1) Consider the time since the last rainfall, chance of significant rainfall in the 60 days following chemical application, soil moisture, land slope, downstream water use, and herbicide mobility and persistence.

f. Protect the riparian vegetation from the toxic effects of the applied herbicides.

(1) Consider the value of the riparian vegetation for stream channel stability, stream shading, source of large woody debris input for fish habitat, support for aquatic food chain, and value for terrestrial wildlife. Also consider the toxicity of the herbicide to riparian plant and animal species.

20. *Aircraft operators shall shut off herbicide application during turns and over open water, residences,* and sensitive sites

21. Appropriate *management of streamsides along dry Class IV streams will be determined during the* project-level environmental assessment. Predicted rainfall, downstream uses and values, vegetative and soil conditions, and wildlife habitat will be evaluated when considering herbicide use in these areas.

22. When transporting more than 120 gallons of herbicide concentrate or 2,000 gallons of mix on forest roads within municipal, fish hatchery, or irrigation supply watersheds, a pilot vehicle will be used. Truck drivers shall be briefed on all haul route hazards, defensive driving, the project safety plan, and must be familiar with the Spill Incident Response Plan.

23. Both worker and public exposure monitoring is required for all herbicide application projects. Pertinent details will be documented, including herbicides used, land areas treated, dates and times of applications, people involved, and mitigation measures followed

24. Monitoring must be planned as an integral part of the overall vegetation management project. Monitoring will be conducted as described in the Region 6 Water Quality Monitoring Guide for Pesticide Detection (*R6-WS-040-1980*). *Monitoring of a spray operation will be conducted to* determine if mitigation measures are (1) being observed, (2) effective in maintaining water quality, and (3) in compliance with state water quality standards and pesticide label requirements. The potential *for contamination of aquifers used for municipal, fisheries, or irrigation use will be considered in the* project level Environmental Assessment Report

25. Herbicide use will be conducted in accordance with direction in Forest Service Manual 2150 (Pesticide-Use Management and Coordination). This defines the authority for Forest Service use of pesticides (the Federal Insecticide, Fungicide, and Rodenticide Act). The objectives and responsibilities of the different administrative levels are documented. This directive includes the requirement for environmental documentation, safety planning, and training when pesticides are used.

26. Forest Service Handbook 2109 11 (Pesticide Project Handbook) will be used to direct project planning. This establishes procedures to guide managers in planning, organizing, conducting and reporting pesticide use projects. Also included is the requirement for a post-treatment evaluation report and the pesticide-use report.

27. Standards and guidelines in Forest Service Handbook 2109 12 (Pesticide Storage, Transportation, Spills, and Disposal Handbook) will be met This defines standards for storage facilities, posting and handling, accountability, and transportation. It covers spill prevention, planning, cleanup, and container disposal requirements.

28. Forest Service Handbook 2109.13 (Pesticide Project Personnel Handbook) will be used to define responsibilities and personnel needs, training, and experience needed for large scale aerial or ground application projects.

29. Project safety will be guided by Forest Service Handbook 6709 11 (Health and Safety Code Handbook, Chapter 9). This directive establishes the basic safety rules, as well as storage transportation, and disposal safety aspects. References and publications to aid in worker safety training are also identified

30. Individual national forests will provide guidance for large and complex projects, as appropriate. This will be in the form of Forest Application Handbooks, Project Safety Plans, Environmental Monitoring Plans, Public Contact Plans, or Law Enforcement Plans. This is where specific requirements for equipment standards, training and quality control, and safety needs are identified for project implementation. Special measures such as spray drift control technology, water monitoring standards, calibration of equipment, and on-site weather limitations are prescribed. These documents also define coordination needs with support organizations and facilities.

31. Pesticide Applicator Licensing and Training will be used as a quality control measure. The Pacific Northwest Region will continue to utilize the programs administered by the Departments of Agriculture in Washington and Oregon. Training and testing of applicators covers laws and safety, protection of the environment, handling and disposal, pesticide formulations and application methods, calibration of devices, use of labels and data sheets, first aid, symptoms of pesticide exposure, etc.

32. Material Safety Data Sheets will be posted at storage facilities, in vehicles, and made available to workers. These provide physical and chemical data, fire or reactivity data, specific health hazard information, spill or leak procedures, instructions for worker hygiene, and special precautions.

33. Care will be taken to avoid skin contact with diesel oil and kerosene If contact does occur, affected skin areas should be promptly washed with soap and water, and soaked clothing will be changed.

REFERENCES

U.S. Department of Agriculture, Forest Service. General water quality best management practices. Portland, OR: Pacific Northwest Region; 1988 November.

U.S. Environmental Protection Agency. Nonpoint source controls and water quality standards. Water Quality Standards Handbook, Chapter 2, General Program Guidance; 1987 August 19; 2-25.

U.S. Environmental Protection Agency. Final report on the federal/state/local nonpoint source task force and recommended national nonpoint source policy. Washington, D.C.: Office of Water; 1985; [17].

APPENDIX F

APPENDIX F

INDIAN RIGHTS

TABLE OF CONTENTS

	Page
Introduction	F-1
Treaties	F-1
Court Decisions	F-2
Laws	F-4
American Indian Religious Freedom Act of August 11, 1978	F-5
Policy	F-6

APPENDIX F

INDIAN RIGHTS

Introduction

The Umatilla National Forest has extensive and long-standing ties with local Native Americans and their various governing organizations, most notably with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). The Forest must ensure that actions taken in implementing the Forest Plan will not result in the abridgement of any treaty or other pertinent rights held by those peoples. The following is a listing of the guaranteed rights (by Congressional Act and Treaty) belonging to local Native Americans. These rights shall be neither abridged nor curtailed by any action taken by the USDA Forest Service. Further, open communications will be carried out by the Forest in order to ensure that other (unwritten historical and cultural) rights shall not be inadvertently violated. The last section summarizes the policy of the Pacific Northwest Region related to Native American tribes.

TREATIES

FEDERAL ACTIONS ASSOCIATED WITH TREATY RIGHTS AND PRIVILEGES[1]

Action	General Nature of Reserved Rights, Privileges, Etc.
Walla Walla, Cayuse, Umatilla, etc. June 9, 1855 Ratified March 8, 1859 12 Stat 945	Article 1 – established Reservation [2] Article 1: (1) Exclusive right of taking fish in all streams running through and bordering reservation, (2) (right of taking fish) at all other usual and accustomed stations in common with citizens ... and erecting suitable buildings for curing, (3) privilege of hunting, gathering roots and berries ... on unclaimed land in common with citizens, (4) privileges of pasturing their stock on unclaimed land.
Nez Perce June 11, 1855 Ratified March 8, 1859 12 Stat 957	Article 2 – established Reservation [3] Article 3: (1) Exclusive right of taking fish in all streams where running through or bordering reservation, (2) right of taking fish at all usual and accustomed places in common with citizens ... and erecting temporary buildings for curing, (3) privilege of hunting, gathering roots and berries ... upon open and unclaimed land, (4) privilege of pasturing their horses and cattle upon open and unclaimed land.
Tribes of Middle Oregon Treaty of June 25, 1855 12 Stat 963 Ratified March 8, 1859	Article 1 – established Reservation [4] Article 1: Exclusive right of taking fish in streams running through and bordering reservation.

---

1 (Including pertinent statutes, executive orders, court decisions)

2 *Modified per Acts of 8/5/1882 (22 Stat 297), 3/3/1885 (23 Stat 341), 10/17/1888 (25 Stat 559); and Secretary of Interior Order of 12/4/1888*

3 *Also see treaty amendments and supplements 6/9/1863 (14 Stat 647), and 8/13/1868 15 Stat 693 (Note. The Wallowa Valley Reserve was established by E O of 6/16/1873 and then rescinded by E O. of 6/10/1875)*

4 *McQuinn Strip added to Reservation pursuant to Act of 9/21/1972 (PL 92-427) 86 Stat 719*

	Action	General Nature of Reserved Rights, Privileges, Etc.
COURT DECISIONS	Winter Doctrine *Winters* v. *U.S.* *207 US 564 (1908)*	Supreme Court decision established doctrine of Federal reserved water: the Government implicitly reserves sufficient water to carry out purposes of a Federal Reservation (including Indian Reservations).
	U.S. v. *Washington* *443 US 658* Divided into two phases: Phase I (Boldt decision) Phase II (Orrick decision) (Both Supreme Court and USDC decisions involved)	Dealt with three issues: (1) Does the fishing clause entitle the Indians to a specific allocation of salmon and steelhead trout, (2) are hatchery bred and artificially propagated fish included in the allocation, (3) does the right of taking fish incorporate the right to have treaty fish protected from environmental degradation? Phase I Decision Indians have the right to a sufficient quantity of the harvestable case area fish to provide them with a moderate standard of living, up to a maximum of 50 percent of the fish. Phase II Decision The District Court findings: (1) The hatchery bred and artificially propagated fish are included in the allocation, mostly because they use the same environment, and are not generally distinguishable, (2) the treaty clause implicitly incorporates the right to have the fishing habitat protected from man-made despoliation This doctrine is consistent with implied reservation of water doctrine, *Winters* v. *United States*, 207 US 564 (1908). It involves only that water which is necessary to fulfill the purposes for which the reservation was created, and not for a secondary use, *United States* v. *New Mexico*. The right exists regardless of the equities, *United States* v. *Cappaert*. Since the existence of an environmentally acceptable habitat is essential to fish survival, without which the right would be meaningless, the implied environmental right is necessary, (3) the State and the United States have a duty not to violate the reserved treaty right This is not an affirmative duty. Duty is merely a negative duty to refrain from authorizing degradation. The Court indicated that, in fact, the state has already assumed that duty, and implicitly acknowledged it has that duty.

Action	General Nature of Reserved Rights, Privileges, Etc.
	Question is of the scope of that duty. – Court rejected no "significant deterioration" standard. – The scope of the impliedly-reserved right may not be broader than the minimal need which gives rise to the implied right. – Duty is to refrain from degrading the fish habitat to the extent that would deprive the Tribes of their moderate living needs. Decision dated September 24, 1980, judgment dated January 8, 1981. The decision is reported at 506 F. Supp 187 (1980). In the judgment, the Court stated: (1) Tribes have implicitly incorporated right not to have fishing habitat degraded by man to the extent the harvestable fish are reduced below that necessary to meet the moderate living need, (2) State must refrain from degrading or authorizing others to degrade the fish habitat to the extent that the Tribes would be deprived of moderate living need, (3) Tribes must establish proximate cause (man's activities are damaging to habitat), (4) State must establish that any environmental damage does not impair moderate living need. The Court did not address the issues of whether State has violated the Tribe's right or remedies, if any, if that right was violated.
No Oilport v. *Carter* Civil No. C80-360M, USDC (1981) Challenge to construction of oil pipeline from Port Angeles to Minnesota by the Northern Tier Pipeline Co. Tribes charged U. S. breached this duty by (1) failing to adequately disclose, and (2) failing to use highest degree of care. Parties moved for summary judgment.	The Court found an issue of fact on proximate cause existed, and that summary judgment was inappropriate. The Tribes must be permitted to satisfy their burden. The Court found for the United States and the corporate defendants on all other issues.

	Action	General Nature of Reserved Rights, Privileges, Etc.
	United States v. *Anderson* Civil No. 2643 USDC (1979)	Reaffirms or establishes several principles:
	An action to adjudicate water rights in the Chamokane Basin (Spokane Reservation). The Court found that the Chamokane Creek and the groundwater system are interrelated.	(1) Water for irrigation of crops was impliedly reservated in amounts necessary to irrigate all the practically irrigable acreage within the reservation, (2) the Tribe's decision not to use such water at this time does not abrogate their right to use it at a later time – no need to continuously use for a beneficial purpose, (3) one of the purposes of the reservation was to ensure access for fishing areas and food. Tribe has reserved implied right to sufficient water to preserve fishing in Chamokane Creek. Water is more important for temperature than minimum flow. Reserved right to 20 CFS or as much more as necessary to keep maximum temperature below 68°F, (4) priority date is time immemorial.
	Limits of State Authority on Off-Reservation Lands (Ref: *American Indian Policy Review Commission - Final Report*, Vol. 1, GPO 1977; pp 184-185)	Regarding the authority of the State to regulate hunting and fishing privileges of Indians, the Commission concluded: (1) Where a Tribe has promulgated their own regulations and demonstrated ability to enforce, the State may not regulate, (2) basic state authority is limited to situations where it is reasonable and necessary in order to prevent destruction of the resource. (Note: The commission cited several references including the *U.S. v. Washington and Antoine Decisions.)*
LAWS	*Indian Claims Commission* Act of August 13, 1946 60 Stat 1049 (1) Established Claims Commission (2) Provided a 5-year period during which Tribes could file claims. (3) Commission terminated 9/78.	*The Commission:* (1) Awarded, dismissed, or transferred claims to Court of Appeals, (2) judicially established Indian land areas (see Final Report, published in 1979). May have some utility to Forest Service for matters such as: – inter-Tribal territory boundaries – background and understanding – certain questions of Tribal Titlement

AMERICAN INDIAN RELIGIOUS FREEDOM ACT OF AUGUST 11, 1978

Public Law 95-341 Joint Resolution

Whereas the freedom of religion for all people is an inherent right, fundamental to the democratic structure of the United States and is guaranteed by the First Amendment of the United States Constitution;

Whereas the United States has traditionally rejected the concept of a government denying individuals the right to practice their religion and, as a result, has benefited from a rich variety of religious heritages in this country;

Whereas the religious practices of the American Indian (as well as Native Alaskan and Hawaiian) are an integral part of their culture, tradition and heritage, such practices forming the basis of Indian identity and value systems;

Whereas the traditional American Indian religions, as an integral part of Indian life, are indispensable and irreplaceable;

Whereas the lack of a clear, comprehensive, and consistent Federal policy has often resulted in the abridgment of religious freedom for traditional American Indians;

Whereas such religious infringements result from the lack of knowledge or the insensitive and inflexible enforcement of Federal policies and regulations premised on a variety of laws;

Whereas such laws were designed for such worthwhile purposes as conservation and preservation of natural species and resources but were never intended to relate to Indian religious practices and, therefore, were passed without consideration of their effect on traditional American Indian religions;

Whereas such laws and policies often deny American Indians access to sacred sites required in their religions, including cemeteries;

Whereas such laws at times prohibit the use and possession of sacred objects necessary to the exercise of religious rites and ceremonies;

Whereas traditional American Indian ceremonies have been intruded upon, interfered with, and in a few instances banned: Now, therefore, be it

RESOLVED BY THE SENATE AND HOUSE OF REPRESENTATIVES OF THE UNITED STATES OF AMERICA IN CONGRESS ASSEMBLED, That henceforth it shall be the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

Sec. 2. The President shall direct the various Federal departments, agencies, and other instrumentalities responsible for administering relevant laws to evaluate their policies and procedures in consultation with native traditional religious leaders in order to determine appropriate changes necessary to protect and preserve Native American religious cultural rights and practices. Twelve months after approval of this resolution, the President shall report back to the Congress the results of his evaluation, including any changes which were made in administrative policies and procedures, and any recommendations he may have for legislative action.

Approved August 11, 1978.

POLICY

Recognizing that Native American tribes are sovereign governments with powers, rights, and privileges parallel to, and in some instances identical to, state and county governments, it is the policy of the Pacific Northwest Region to exercise our responsibilities to the Native American in the Northwest by:

1. Establishing a government to government relationship between the Forest Service and tribal governments in the Region,

2. building stable, long-term working relationships with tribal governments which result in positive, mutually understood, and beneficial solutions to common situations,

3. raising the understanding and awareness of our employees, managers, and executives of the rights, concerns, and culture of the Native Americans,

4. bringing Native American workers into the workforce in ways that benefit and accommodate the needs and sensitivities of both the Forest Service and Native Americans.

OBJECTIVE

Ensure that policies, programs, and project activities of the Pacific Northwest Region affecting Native Americans are applied consistently between the national forest and meet the overall Federal policy of working as one government to another.

APPENDIX G

APPENDIX G

NATIONAL WILD AND SCENIC RIVERS

TABLE OF CONTENTS

	Page
Introduction	G-1
Grande Ronde River	G-3
North Fork John Day River	G-7
Wenaha River	G-17
Tucannon River	G-20

APPENDIX G

NATIONAL WILD AND SCENIC RIVERS

INTRODUCTION

In June 1980, the Regional Forester issued direction to forest supervisors to develop and establish an inventory of potential wild and scenic (W&S) rivers in response to the Chief's direction and President's mandate of August 1979. The Regional Forester's office subsequently developed regional objectives, criteria, and guidelines to determine the eligibility, classification, and suitability of potential wild and scenic rivers in concert with the USDA-USDI Guidelines (National Wild and Scenic Rivers System, Final Revised Guidelines for Eligibility, Classification, and Management of River Areas published in FR/Vol. 47, No. 173/ Tuesday, September 7, 1982/ Notices, p 39454-39461). Also, direction was made to include consideration of potential W&S rivers in the impending Forest Plan process under the National Forest Management Act.

Study Rivers include rivers designated by Congress for study from the Nationwide River Inventory (NRI) or identified as potential wild and scenic rivers by a National Forest. The assessment of a Study River follows a three-step process: (1) The determination of eligibility; (2) classification as to wild, scenic, or recreational potential; and (3) determination of suitability for wild and scenic river status.

Eligibility

The eligibility of a river for the national system is determined by applying the criteria in sections 1(b) and 2(b) of the Wild and Scenic Rivers Act and the supplemental criteria in the USDA-USDI Guidelines. To be eligible for inclusion, a river must be free-flowing and, with its adjacent land area, must possess one or more "outstandingly remarkable" values.

Classification

The potential classification of a river is based on the condition of the river and the adjacent lands as they exist at the time of study. Classification will govern the prescription for the management of the area encompassing the river. The Wild and Scenic Rivers Act specifies three classification categories for eligible rivers. The classification standards in Section 2 of the Act are:

- Wild river -- those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

- Scenic river -- those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and undeveloped, but accessible in places by roads.

- Recreational river -- those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past (16 U.S.C. 1273).

Suitability

The determination of suitability is the final step in the river assessment. This step provides the basis for the decision to recommend designation or nondesignation of the river. River areas that are determined to be eligible for designation must be protected until a decision is made as to their suitability.

Suitability is determined either by completing a river study in the Forest Plan, or by a subsequent separate study. If this decision is deferred, the Forest Plan establishes a special management area requiring future evaluation (Appendix D, Management Strategy A7(c)).

The following W&S river descriptions were developed in accordance with the content and format directed by the Regional Forester's 1920/2300 (Rn) memo of October 18, 1982. These descriptions of the resource provide: (1) inventory data to determine a river's eligibility, (2) a basis for analyzing the effects of classification or nonclassification of a river, and (3) sufficient description of the resource to prepare a legislative EIS should classification be recommended. The descriptions in this appendix were used to determine the eligibility and classification of the river segments discussed in Chapter III and Appendix D (Management Strategies A7 and A7(c)).

Timber data are based on data base suitable acres in the W&S river corridor and comparable roadless area timber volumes in lieu of site-specific data.

THE OMNIBUS OREGON WILD AND SCENIC RIVERS ACT OF 1988

The Act of 1988 designated the Grande Ronde, North Fork John Day, and Wenaha rivers outright as part of the National Wild and Scenic Rivers System as shown in Chapter III in the Wild and Scenic Rivers section.

Prior to the advent of the Omnibus Oregon Wild and Scenic Rivers Act of 1988, inventory studies were made of the potential wild and scenic river candidates only within national forest boundaries as the limit of Forest Service jurisdiction. Thus the individual river descriptions in Appendix G are limited to the national forests After the Act, a separate task group, the Wild and Scenic Rivers Planning Team, was established to represent the Umatilla and Wallowa-Whitman National Forests in the conducting the studies, analysis, and preparation of Wild and Scenic River Management Plans in cooperation with BLM and state representatives. The goal is to have a single W&S River Management Plan by 1992, encompassing all jurisdictions as appropriate for each W&S river designated by Congress in northeastern Oregon. See FEIS, Chapter III, Table III-43 for a display of the Wild and Scenic Rivers for the Umatilla NF as per Omnibus Oregon Wild and Scenic Rivers Act.

GRANDE RONDE RIVER

General Setting

Total miles of river: 17.4.

Total miles: National Forest, 15 8; private, 1.5; BLM, 0.1.

Acres included in one-quarter mile corridor on each side of river: National Forest, 4,685; private, 460; BLM, 25.

The above miles and acres are inclusive between the beginning and ending termini at National Forest boundaries and do not include additional miles and acres on other lands in the wild and scenic river legislation P.L. 100-557, The Omnibus Oregon Wild and Scenic Rivers Act of 1988.

Outstandingly Remarkable Values

Scenic, recreation, geologic, and fish and wildlife; it's one of the most important and valuable rivers in northeastern Oregon in terms of recreational useability. The river flows between rugged basalt outcrops which rise, in bench and cliff topography, about 2,000 feet to the plateau above. There are no roads or trails within this canyon. The steep canyon walls limit canyon access only to river craft. Floating, hunting, fishing, and camping occurs over most of the year. It is one of the best streams in this part of the state for rainbow trout fishing. Anadromous steelhead and salmon use this stretch of river for passage to upstream spawning areas as adults, and over winter here as smolts before migrating to the ocean. The federally listed (threatened) bald eagle occurs as a winter migrant.

This area lies in Union and Wallowa counties in T.3N., R.40E.; T.4N , R.40 and 41E.; and T 5N., R.41E., W.M. This section of the Grande Ronde River forms part of the boundary between the Umatilla and the Wallowa-Whitman National Forests.

The river meanders throughout this section with an average gradient of 0.4 percent, and an average width of 70 feet. There are many rapids or chutes with fast water interspersed between stretches of relatively slow water. The canyon walls bordering the river are dominated by rimrocks with intervening slopes covered either with grass or with scattered stringers of timber. The elevation where the river leaves the Forest is 1,900 feet.

Eligibility Determination

This section of river has a statutory designation as a wild river based on the following attributes and minimum eligibility:

Water Resources Development: Free of impoundment.
Shoreline Development: Essentially primitive.
Accessibility: Inaccessible except by river craft.
Water Quality: Waters unpolluted.
Classification: Wild.

Description of General Resource

The canyon walls bordering the river are composed of slopes greater than 60 percent with only an occasional interspersed bench. Slopes rise about 2,000 feet to the plateau above. Basalt outcrops along steep side slopes create a bench and cliff topography.

These open steep grasslands, containing dry scabland vegetation such as ninebark and oceanspray, are broken by stringers of pine-fir timber. The riparian area includes some moist meadows, cottonwood clumps, alder, blackberry, and other shrubs.

The riparian habitat is in excellent condition and very important to the area and the region.

There are no roads or trails within the Grande Ronde River canyon.

Steep canyon walls and slopes limit overland foot travel access. No trails or roads access the river. Access is by river craft only into the river canyon.

The following are airline miles to nearby population centers: Walla Walla, Washington, 34 miles; Tri-Cities, Washington, 84 miles; Lewiston, Idaho, 54 miles; Pendleton, Oregon, 52 miles; and La Grande, Oregon, 40 miles.

Dependence upon the river for annual recreation use (expressed in RVD's) is as follows: boating, 5,500, swimming, 200; fishing, 400; camping, 600; hunting, 500; and sightseeing, 100.

Scenic Recreation: Where the protection of the outstanding natural landscapes is the objective concept, the visual quality objectives for this area are preservation and retention.

At present, there are no commercial uses on the private land. There is a possibility for some future timber harvesting along the river if the land remains in private ownership. There is also a proposal to construct a dam and power generating plant.

Water Yield

Grande Ronde River at the Rondowa Gauging Station:

Annual Flow: Average discharge in Acre Feet (Ac. Ft.) (54 years of record)		1,550,000 Ac. Ft.
Seasonal Flow:	Summer and fall average	282,100 Ac. Ft.
	Winter average	362,700 Ac. Ft.
	Spring runoff average (Peak flow generally occurs in May.)	905,200 Ac. Ft.

Water Uses

Reservoirs Below: The nearest reservoir is located at river mile 124, Lower Granite Dam on the Snake River.

Power Withdrawal: Section 7 of the Wild and Scenic Rivers Act prohibits the Federal Power Commission from licensing the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other work under the Federal Power Act on or directly affecting any designated river. This supersedes the Federal Power Act of June 10, 1920, Power Site Classification No. 191 (PSC 191) withdrawing and reserving a corridor along the river for power development. Public Law 359 of August 11, 1955, provided opening of these lands to mineral entry providing power rights to the land be retained as per Section 24 of the Federal Power Act.

Irrigation and power generation are the dominant uses.

Water Rights: Minimum instream flow requirements for fish – 300 CFS.

Hydroelectric Potential: The Wild and Scenic River Act protects the free flowing condition of the river. There was a FERC Application for Preliminary Permit (P-6754) for hydroelectric study of a site between river miles 76 and 77 in Section 36, T.4N., R.40E., W.M. During the next 3 years, the applicant intended to study the feasibility of construction of a 100-foot high earthen dam and power generating facilities for production of 81.5 million kwh.

Water Quality: No data available.

Wildlife

The north side of the entire reach of the river within the Forest Boundary has been identified and serves as big game winter refuge habitat for mule deer, Rocky Mountain elk, and big horn sheep.

Fish Production

Anadromous: No spawning takes place in this stretch of the Grande Ronde. Several thousand smolts overwinter in this mainstem area before migrating to the ocean. Adults use this stretch of river for passage to upstream spawning areas.

Resident: Wild, legally harvestable trout production is estimated at 5,070 annually.

T/E Species

Plants: There are no inventoried federally listed T/E plant species within the river area. It is possible that the river area contains the Spalding's silene (*Silene spaldingii* Wats.) which is recommended for T/E status. Habitat similar to that required for the federally listed T/E MacFarlane's four-o'clock (*Mirabilis macfarlanei* Const. and Roll) found in the Snake River area appears to be present. Also, habitat for a number of State of Oregon listed T/E and rare plants exists in the river area, and the likelihood of these areas containing state listed plants is fairly high.

Animals: There is one federally listed species known to occur within the river area. This is the threatened bald eagle (*Haliaeetus leucocephalus*). It occurs as a winter migrant utilizing suitable large snags as perch trees. In addition to the winter migrants, the Pacific Bald Eagle Recovery Plan (1986) also targets two nesting territories for the Grande Ronde River. While there are no confirmed sightings, there is also a possibility that the endangered peregrine falcon (*Falco peregrinus anatum*) occurs within this area.

Recreation

Access is provided only by boat, raft, canoe, or overland foot or horse travel. There is excellent trout fishing, primitive camping, and good big game hunting via water access. Popular for float trips, the river has ratings of three and four on the international scale of difficulty (five or better being the most difficult). The area offers rugged scenery and wildlife viewing.

Estimated future demand in recreation visitor days (RVD's):

	Time Periods				
Activity	1981-1990	1991-2000	2001-2010	2011-2020	2021-2030
Boating	6,704	7,867	8,412	8,994	9,617
Swimming	242	265	283	303	324
Fishing	458	491	525	561	600
Camping	712	764	817	874	935
Hunting	583	607	649	694	742
Sightseeing	123	139	149	159	170

Minerals, Energy

There has been little mineral exploration in this area for locatable minerals. There are no existing claims.

There were several oil and gas lease applications, covering 3,000 acres, filed with the Bureau of Land Management (BLM). The Forest Service recommendations to BLM provided for leasing without surface occupancy. No leases have been issued to date.

Timber

Suitable Acres: 2,021
Standing Volume: 5,225 MCF
Working Group: North Associated (ponderosa pine, Douglas-fir, white fir, larch)
Potential Yield: 0
Programmed Harvest: 0

This area has the usual amount of insect and disease problems found in unmanaged natural stands of timber. There is long-range potential of spread to adjacent managed stands, but this is a minor risk at this time.

Historical-Cultural, based on the Cultural Resource Inventory Plan

There are no known (verified) cultural resource sites in this river area. The sensitivity for cultural resources is moderate-high. A single Native American site is suspected in the area according to the Forest Overview.

Transportation Routes	Existing: None.
	Potential: None. The primary use of this river area is recreation; part of the uniqueness of the area is its accessibility only by river; the average slope is greater than 60 percent; total standing timber volume on the adjacent canyon slopes is very low; and a road within the area would not be cost-effective.
Grazing	Present: Use is minor. The Wallowa-Whitman National Forest side of the river is not within any allotment. On the Umatilla National Forest side of the river, the Eden C&H Allotment extends from the Forest Boundary upstream for 4 miles. There is no use on the remainder. The season begins late on the allotment and only minor use occurs along the river because the forage has dried by then.
	Potential: The area would make suitable early-season sheep range, something which is in short supply. One acre per 0.1 AUM might be a reasonable expectation for future sheep use. However, possible conflicts with deer winter use may preclude this allocation. The Wallowa-Whitman NF side is very steep and not conducive to future use.

NORTH FORK JOHN DAY RIVER

The reach of the river which lies within the boundaries of the Forest can logically be divided into the following three segments: (1) Trail Creek to Big Creek, (2) Big Creek to Texas Bar Creek, and (3) Texas Bar Creek to the Forest Boundary. A fourth segment from the Forest Boundary downstream to Camas Creek (4.4 miles) was added by Congress as a recreational river in the Omnibus Oregon Wild and Scenic Rivers Act. It will be incorporated with the third segment above in the Wild and Scenic River Management Plan. Also, an additional 0.6 mile of recreational river lies upstream from Trail Creek to the Umatilla NF Boundary. It is contiguous and part of the 7.5 miles reach of recreational river extending from the Wallowa-Whitman NF as a result of the 1988 Act.

The miles and/or acres addressed here are inclusive between original beginning and ending termini of the inventoried rivers at or within the National Forest boundaries and do not include the additional miles and acres in the wild and scenic river legislation P.L. 100-557, The Omnibus Oregon Wild and Scenic Rivers Act of 1988. The additional segments will be addressed by the ad hoc W&S Rivers Planning Team in the Wild and Scenic Rivers Management Plan.

Outstandingly Remarkable Values

Scenic, recreation, cultural, historic, and fish and wildlife; it is one of the most important and valuable rivers in northeastern Oregon in terms of the fisheries resource. This river segment has the largest natural spawning population of anadromous fish in the Columbia River system above Bonneville Dam. The upper two-thirds of this section is within the North Fork John Day Wilderness. The entire segment is considered a valuable visual resource. The threatened bald eagle occurs as a winter migrant. This section of river has seen much gold mining, mostly placer, beginning in the late 1800's, and was also worked by a floating bucket dredge on the lower one-third. The river corridor has a high probability for cultural resources, both historic and prehistoric

SEGMENT 1 TRAIL CREEK TO BIG CREEK

General Setting

Total miles of river: 24.3.
Total miles: National Forest, 24.3 (1.5 miles are on the Wallowa-Whitman NF)

Acres included in one-quarter mile corridor on each side of river: National Forest, 7,070 acres (353 acres are on the Wallowa-Whitman NF).

This area lies in Grant County between the junction with Trail Creek in Section 34, T.7S., R.35½E., W.M., and junction with Big Creek in Section 13, T.7S., R.33E., W.M.

This section of river has an average gradient of 1.5 percent, an average width of 35 feet, and is about 3,300 feet in elevation at Big Creek. There are, within this section, approximately 2 miles of scenic rock formations around Whiskey Peak and Wind Rock which include impressive geologic formations comprising the canyon walls and the streambed. Numerous historical remnants of gold mining activity, including log cabins and traces of placer mining, are evident.

Eligibility Determination

This section of the river has a statutory designation as a wild river based on the following attributes and minimum eligibility:

Water Resources Development: Free of impoundment.
Shoreline Development: Essentially primitive.
Accessibility: Generally inaccessible except by trail.
Water Quality: Water unpolluted.
Classification: Wild.

Description of General Resource

The slopes bordering the river are greater than 30 percent, with one-third greater than 60 percent. The mountain ridgetops, which are several hundred feet above the river near Trail Creek, are about 2,500 feet above the river at Big Creek. Canyon slopes, while mostly steep ridge sideslopes, are dissected by large side drainages.

Vegetation includes all native coniferous species. The north-facing slopes are very densely timbered with stands of fir, larch, spruce, and lodgepole pine. The south aspects are covered with moderately dense stands of ponderosa pine.

The riparian habitat is in excellent condition and very important to the area and the region.

The North Fork John Day River-Granite Creek National Recreational Trail lies on the north side of the river. The distance separating the trail from the river averages about 100 yards. There are 10 feeder trails which connect with roads 3 to 5 miles distant and which join the North Fork Trail. In addition, Forest Road 52 lies less than 1 mile from Trail Creek.

The entire length of the river is accessible by the North Fork John Day River-Granite Creek Recreational Trail.

The following are airline miles to nearby population centers: Baker, Oregon, 38 miles; La Grande, Oregon, 40 miles; Pendleton, Oregon, 56 miles; Walla Walla, Washington, 84 miles; and Tri-Cities, Washington, 104 miles.

Dependence upon the river for annual recreation use (expressed in RVD's) is as follows: fishing, 600, hiking, 1,000; camping, 300; sightseeing, 900; horseback riding, 500; hunting, 200; and recreational mining, 500.

The allocation of land surrounding this segment of river is a statutory wilderness.

At present, there are no commercial uses on the private land. This land is part of an inactive patented mining claim, upon which resides a cabin accessible by road. The land has been logged previously, and will undoubtedly support timber harvest in the future.

Water Yield

Annual Flow:	145,178 Acre Feet (Ac. Ft)	
Seasonal Flow:	Summer and fall average	14,518 Ac. Ft.
	Winter average	21,777 Ac. Ft.
	Spring runoff average	108,884 Ac. Ft.

Water Uses

Reservoirs Below: Nearest is the reservoir behind the John Day Dam in the Columbia River, 255 miles away.

Power Withdrawal: None. Section 7 of the Wild and Scenic Rivers Act prohibits the Federal Power Commission from licensing the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other works under the Federal Power Act on or directly affecting any designated river.

Irrigation: None.
Domestic Uses: None.
Flood Control Needs or Projects: None.
Water Rights: Minimum instream flow requirements for fish - 35 CFS.

Hydroelectric Potential: The Wild and Scenic River Act protects the free flowing condition of the river.

Water Quality: Good to excellent.

Wildlife

This segment of river provides habitat for a wide variety of wildlife species including big game species (elk, deer, and black bear), many passerine bird species and a number of raptors (including several nesting osprey). The entire area serves as summer range for elk and deer and provides needed cover during the summer months and a migrational corridor during the fall.

Fish Production – Annual

Anadromous:	Spawning Adults	Smolts
Spring Chinook	716	67,958
Summer steelhead	436	19,840

Resident: An estimated 7,290 wild, legally harvestable trout are produced annually. There is no hatchery stocking of this river segment.

Anadromous: The North Fork John Day River has the largest natural spawning population of anadromous fish in the Columbia River system above Bonneville Dam.

T/E Species

Plants: There are no federally listed T/E plant species currently inventoried within the river area. The likelihood of finding federally listed plants is low. However, habitat for a number of State of Oregon listed T/E and rare plants exists in the river area, and the likelihood of these areas containing state listed plants is fairly high.

Animals: There is one federally listed species known to use the river area, the threatened bald eagle (*Haliaeetus leucocephalus*). It occurs as a winter migrant and utilizes suitable large snags as perch trees. Both the actual and anticipated levels of use by eagles are low.

Recreation

Recreation opportunities include hiking and horseback riding on the North Fork John Day River-Granite Creek National Recreational Trail. In addition, there are abundant scenic views of the river and adjacent land (including much evidence of historical gold mining operations), and many opportunities for hunting, primitive camping, and recreational mining.

The entire length of the North Fork John Day River on the Forest is considered a valuable visual resource. The visual quality objective for the river corridor is retention.

Estimated future demand in recreation visitor days (RVD's):

	Time Periods				
Activity	1981-1990	1991-2000	2001-2010	2011-2020	2021-2030
Fishing	687	737	788	843	901
Hiking	1,197	1,221	1,306	1,396	1,493
Camping	356	382	408	436	466
Sightseeing	1,107	1,248	1,334	1,426	1,525
Horseback riding	599	623	666	712	761
Motorcycle travel	816	902	964	1,031	1,102
Hunting	233	242	259	277	296
Prospecting	583	644	687	735	786

Minerals, Energy

History: This section of the river has seen a good deal of gold mining, mostly placer, beginning in the late 1800's. Numerous small placers were mined by both Caucasians and Chinese. Three larger scale operations were the Thornberg, Gutridge, and Dixson Bar sites. These larger mines also built their own sawmills to cut lumber for sluices and structures Most of the 21 cabins along this segment of river are remnants of turn-of-the-century mining activity. Seven cabins are used by miners on a seasonal basis. Old mining ditches and placer sites are visible throughout the segment.

This segment of the North Fork John Day currently has 174 unpatented mining claims filed with the BLM (BLM claim listing, October 13, 1982). The majority of claimants participate in recreational gold mining using hand tools and suction dredges. Six projects have operating plans with the Forest Service but they are also fairly small in scale, using no heavy equipment. Access to all claims is by the North Fork National Recreation Trail. No claimants are realizing a substantial profit, but interest continues.

Timber

Suitable Acres: 3,632
Standing Volume: 9,399.7 MCF (unavailable -- all in statutory wilderness)
Working Groups: South Associated (ponderosa pine, Douglas-fir, white fir, larch, subalpine fir, and Engelmann spruce); Lodgepole Pine (lodgepole pine, white fir, and subalpine fir); Ponderosa Pine (ponderosa pine).
Potential Yield: 0 MBF (all acres and volume for this segment in wilderness)
Programmed Harvest: 0 MBF

This area has the usual amount of insect and disease problems found in unmanaged natural stands of timber. There is long-range potential of spread to adjacent managed stands, but this risk is of minor importance at this time.

Historical-Cultural

There are no recorded cultural resources in this area. However, the river corridor on the North Fork John Day River is a high probability zone for cultural resources, both historic and prehistoric, since a relatively high occurrence of human occupation and settlement has been documented along river drainages.

Transportation Route

Existing: None.

Potential: None.

Grazing

Present: None. The boundary of the Trout Meadow Sheep Allotment is adjacent to the river for 1 mile.

Potential: Late summer sheep use. This is part of both the Rabbit and Tencent Allotments, both of which were formerly used by sheep. Nearby logging will increase the potential to an estimated 1 acre per 0.05 AUM. Recreation horse pack and saddle stock probably use fewer than 10 AUM's. There are no plans to increase stocking of livestock within the wilderness.

SEGMENT 2 BIG CREEK TO TEXAS BAR CREEK

General Setting

Total miles of river: 10.5.
Total miles: National Forest, 9.3; private, 1.2.

Acres included in one-quarter mile corridor on each side of river: National Forest, 2,823; private, 372; State, 73.

This area lies in Grant and Umatilla counties between the junctions of the boundary of the North Fork John Day Wilderness between Section 18, T.7S., R.34E., and Section 13, T.7S., R.33E., W.M ; and Texas Bar Creek in Section 27, T.6S., R.32E., W.M.

This section of river has an average gradient of 9.4 percent, an average width of 60 feet, and is about 3,100 feet in elevation at Texas Bar Creek. Numerous historical remnants of gold mining activity, such as log cabins and traces of placer mining, are evident.

Eligibility Determination

This section of river has a statutory designation as a scenic river based on the following attributes and minimum eligibility:

Water Resources Development: Free of impoundment.
Shoreline Development: Largely primitive and undeveloped.
Accessibility: Accessible in places by road.
Water Quality: Waters unpolluted.
Classification: Scenic.

Description of General Resource

The canyon slopes bordering the river are greater than 30 percent; one-fifth of them are greater than 60 percent. The mountain ridgetops are about 2,500 feet above the river. Canyon slopes are mostly steep ridge sideslopes.

The north-facing slopes are very densely timbered with stands of fir and larch. The south aspects are covered with moderately dense stands of ponderosa pine.

Forest Road 5506 lies about 100 yards north of the river for nearly all of its length. Forest Road 5505 crosses the North Fork John Day at Texas Bar Creek and runs the entire length of this segment while gradually moving further from the river. At Big Creek, this road is about 1.5 miles south and 2,500 feet higher than the river. There are no trails along this segment of the river.

This entire segment of river is accessible from Road 5506 which is graveled for most of its length.

The following are airline miles to nearby population centers: Baker, Oregon, 48; La Grande, Oregon, 42; Pendleton, Oregon, 48; Walla Walla, Washington, 78; and Tri-Cities, Washington, 98.

Dependence upon the river for annual recreation use (in RVD's by activity) is as follows: fishing, 600; sightseeing, 1,000; camping, 8,000; hunting, 100; motorcycle travel, 300; and recreational mining, 500.

Fish habitat improvement is the allocation south of the river and between Big Creek and Oriental Creek north of the river. The concept of this allocation is to manage sensitive watersheds to enhance the fish habitat. The remainder of this segment, between Oriental Creek and Texas Bar Creek, has a wood fiber allocation where the commercial timber resource will be optimized for its potential yield.

The riparian habitat is in excellent condition and very important to the area and the region.

At present, there are no commercial uses on the private land. This land contains three cabins, and has the potential for subdivision or for additional timber harvest. This land is also within a grazing allotment.

Water Yield

Annual Flow in Acre Feet (Ac. Ft.):		191,464 Ac. Ft.
Seasonal Flow:	Summer and fall average	19,146 Ac. Ft.
	Winter average	28,720 Ac. Ft.
	Spring runoff average	143,598 Ac. Ft.

Water Uses

Reservoirs Below: Nearest is behind the John Day Dam in the Columbia River, 245 miles away.

Power Withdrawal: None Section 7 of the Wild and Scenic Rivers Act prohibits the Federal Power Commission from licensing the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other works under the Federal Power Act on or directly affecting any designated river.

Irrigation: None.
Domestic Uses: None.
Flood Control Needs or Projects: None.
Water Rights: Minimum instream flow.
Requirements for Fish: 35 CFS.

Hydroelectric Potential: The Wild and Scenic River Act protects the free flowing condition of the river.

Water Quality: Good to excellent.

Wildlife

The lower 4 to 5 miles of this river segment provides needed winter range habitat for mule deer and elk. It also provides important habitat for a variety of passerine bird species and a number of raptors.

Fish Production – Annual

Anadromous:

	Spawning Adults	Smolts
Spring Chinook	303	28,752
Summer steelhead	185	8,394

Resident: An estimated 3,150 wild, legally harvestable trout are produced annually. The Oregon Department of Fish and Wildlife stocks legal sized rainbow trout (about 6,000 from Big Creek downstream to the Umatilla National Forest Boundary).

Anadromous: The North Fork John Day River has the largest natural spawning population of anadromous fish in the Columbia River system above Bonneville Dam.

T/E Species

Plants: There are no inventoried federally listed T/E plant species within the river area. The likelihood of finding federally listed plants is low. However, habitat for a number of State of Oregon listed T/E and rare plants exists in the river area, and the likelihood of these areas containing state listed plants is fairly high.

Animals: There is one federally listed species known to occur within the river area, the threatened bald eagle (*Haliaeetus leucocephalus*). It occurs as a winter migrant and utilizes suitable large snags as perch trees. While there are no confirmed sightings, there is also a possibility that the endangered peregrine falcon (*Falco peregrinus anatum*) occurs within this area.

Recreation

Recreation opportunities include recreation mining, semi-primitive camping, and trout fishing. In addition, there are limited opportunities to float the river. There is much evidence of historical gold mining operations.

The entire length of the North Fork John Day River on the Umatilla National Forest is considered a valuable visual resource. The visual quality objectives for the river corridor are retention and partial retention.

Estimated future demand in recreation visitor days (RVD's):

	Time Periods				
Activity	1981-1990	1991-2000	2001-2010	2011-2020	2021-2030
Fishing	687	737	788	843	901
Sightseeing	1,230	1,387	1,483	1,586	1,696
Camping	9,492	10,180	10,885	11,639	12,445
Hunting	116	121	129	138	148
Motorcycle travel	350	387	414	443	474
Prospecting	583	644	689	737	788

Minerals, Energy

History: In addition to placer mining by Caucasian and Chinese miners at the turn of the century, this segment was worked by a floating bucket dredge following World War II and up to the mid-1950s. A good deal of gold was recovered by the dredge although it was reportedly all very fine gold with few actual nuggets. Dredging ceased upstream from Oriental Creek and the dredge tailing piles remain as visual evidence of the activity. This segment of the river has 66 unpatented mining claims listed on the October 13, 1982, BLM mining claim list. Although the bulk of mining activity is recreational suction dredging, there are several miners who utilize small tractors and washing plants (trommels). The presence of Road 5506 along the river allows access by larger mechanized equipment which can process greater volumes of placer material. Placer gold deposits along the North Fork John Day consist of fine flake gold and "flour" gold, so no high commercial values are anticipated. Three old mining cabins exist but are no longer habitable.

Timber

Suitable Acres: 1,600
Standing Volume: 4,136 MCF
Working Group: South Associated (ponderosa pine, Douglas-fir, white fir, larch, and Engelmann spruce), Ponderosa Pine (Ponderosa pine).
Potential Yield: 468 MBF
Programmed Harvest: 468 MBF

This area has the usual amount of insect and disease problems found in unmanaged natural stands of timber. There is long-range potential of spread to adjacent managed stands, but this risk is of minor importance at this time.

Historical-Cultural

The cultural resource sensitivity of this segment is high. According to the Forest Overview, a variety of potential historic sites including a wagon road, mining claims, and cabins are present. There is a single historic cabin recorded in this river area (verified 14.1.6S.32E.35.1).

Transportation Routes

Existing: Road 5506 is a single lane gravel road with turnouts, which runs the full length of this river area, on the north side of the river. Road 5507 lies north and parallel to Road 5506. Parts of Road 5507 lie within the river area. The primary use of Road 5506 is for recreation, while the primary use of Road 5507 is for timber removal (this is based on estimated volumes).

Potential: None. The area north of the river has its road system in place for timber harvest. The canyon slopes south of the river are better accessed for timber harvest from the mountain ridgetops than from the river bottom.

Grazing

Present: The river forms part of the south boundary to the Texas Bar C&H Allotment. Present use on this allotment is near the desired use level, about 1 acre per 0.05 AUM. There is only incidental use on the south side of the river as a result of cattle wandering in from the Texas Bar or the Indian Creek Allotments. The south side of the river is heavily timbered and not in an allotment.

Potential: The potential is low unless significant logging takes place.

SEGMENT 3 **TEXAS BAR CREEK TO FOREST BOUNDARY** [1]

General Setting

Total miles of river: 3.9 [1]
Total miles: National Forest, 3.1; private, 0.8

Acres included in one-quarter mile corridor on each side of river: National Forest, 926; private, 310.

This area lies in Umatilla County between the junction with Texas Bar Creek in Section 27, T.6S., R.32E., W.M., and the Forest Boundary in Section 31, T 6S., R.32E., W.M.

This section of river has an average gradient of 1.5 percent, an average width of 75 feet, and is about 2,800 feet in elevation at the Forest Boundary. Numerous historical remnants of gold mining activity, including log cabins and traces of placer mining, are evident.

Eligibility Determination

This section of river has a statutory designation as a recreational river based on the following attributes and minimum eligibility:

Water Resources Development: Free of impoundment.
Shoreline Development: Some development.
Accessibility: Readily accessible by road.
Water Quality: Waters unpolluted.
Classification: Recreational.

Description of General Resource

The canyon slopes bordering the river are greater than 30 percent; about one-third are greater than 60 percent. The mountain ridgetops are about 1,200 feet above the river. Slopes north of the river are steep, extremely dissected ridge sideslopes, while most of those south of the river are moderately steep unstable slopes.

The north-facing slopes are densely timbered with stands of ponderosa pine and Douglas-fir. The south-facing slope vegetation is characterized by open steep grassland steppes broken by ponderosa pine/Douglas-fir stringers.

Forest Road 55 lies about 100 yards north of the river throughout its entire length. Forest Road 5505 crosses the North Fork John Day River at Texas Bar Creek but turns away from this segment. The nearest road to the south side of most of this segment is a dirt road over a mile away. There is a low standard road that fords the river in Section 27 to reach the private land on the south side.

This entire segment of river is accessible from Road 55 which is graveled throughout its length.

The following are airline miles to nearby population centers: Baker, Oregon, 48; La Grande, Oregon, 42; Pendleton, Oregon, 48; Walla Walla, Washington, 78; and Tri-Cities, Washington, 98.

Dependence upon the river for annual recreation use (in RVD's by activity) is as follows: fishing, 8,000; sightseeing, 1,000; camping, 2,000; recreation mining, 500; motorcycle travel, 200; and hunting, 100.

General forest wildlife habitat is the allocation on this segment of river. The concept of this allocation is to optimize the general forest wildlife habitat, represented by elk as the wildlife indicator species, while limiting public automobile access in order to reduce potential wildlife harassment and to provide dispersed non-automobile recreation opportunities year-round.

1 Miles of National Forest administration will be augmented by 4 4 miles for a total of 8 3 miles of congressionally designated recreational river from Texas Bar Creek to Camas Creek

The riparian habitat is in excellent condition and very important to the area and the region.

At present, there are no commercial uses on the private land The land is within a grazing allotment. There is evidence of old logging and the area has potential for subdivision or for additional timber harvest.

Water Yield

Annual Flow in Acre Feet (Ac. Ft.):		219,380 Ac. Ft.
Seasonal Flow:	Summer and fall average	21,938 Ac. Ft.
	Winter average	32,907 Ac. Ft.
	Spring runoff average	164,535 Ac. Ft.

Water Uses

Reservoirs Below: Nearest is behind the John Day Dam in the Columbia River, 240 miles away.

Power Withdrawal: None. Section 7 of the Wild and Scenic Rivers Act prohibits the Federal Power Commission from licensing the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other works under the Federal Power Act on or directly affecting any designated river.

Irrigation: None.
Domestic Uses: Dale Ranger Station uses 5.5 million gallons/year.
Flood Control Needs or Projects: None.
Water Rights: Minimum instream flow requirements for fish – 35 CFS.

Hydroelectric Potential: The Wild and Scenic River Act protects the free flowing condition of the river.

Water Quality: Good to excellent.

Wildlife

This entire segment provides important winter range habitat for both elk and deer and serves as a migrational corridor for osprey during the fall A number of passerine birds and larger raptors also utilize the area extensively.

Fish Production –Annual

Anadromous:	Spawning Adults	Smolts
Spring Chinook	138	13,069
Summer steelhead	84	3,816

Resident: An estimated 1,170 wild, legally harvestable trout are produced annually. The Oregon Department of Fish and Wildlife stocks legal sized rainbow trout (about 6,000 from Big Creek downstream to the Umatilla National Forest Boundary).

Anadromous: The North Fork John Day River has the largest natural spawning population of anadromous fish in the Columbia River system above Bonneville Dam.

T/E Species

Plants: There are no inventoried federally listed T/E plant species within the river area. The likelihood of finding federally listed plants is low. However, habitat for a number of State of Oregon listed T/E and rare plants exists in the river area, and the likelihood of these areas containing state listed plants is fairly high. There is a site below Texas Bar Creek which is inventoried for the Scapose catchfly (*Silene scaposa Robins* var. *scaposa*), a State of Oregon listed plant.

Animals: There is one federally listed species known to occur within the river area, the threatened bald eagle (*Haliaeetus leucocephalus*). It occurs as a winter migrant and utilizes suitable large snags as perch trees. While there are no confirmed sightings, there is also a possibility that the endangered peregrine falcon (*Falco peregrinus anatum*) occurs within this area.

Recreation

Recreation opportunities include recreation mining, semi-primitive camping, and trout fishing. In addition, there are limited opportunities to float the river. There is some evidence of historical gold mining operations.

The entire length of the North Fork John Day River on the Umatilla National Forest is considered a valuable visual resource The visual quality objectives for the river corridor are retention and partial retention.

Estimated future demand in recreation visitor days (RVD's):

	Time Periods				
Activity	1981-1990	1991-2000	2001-2010	2011-2020	2021-2030
Fishing	9,156	9,820	10,500	11,228	12,006
Sightseeing	1,230	1,387	1,483	1,586	1,696
Camping	2,373	2,545	2,721	2,910	3,112
Prospecting	583	644	689	737	788
Motorcycle travel	233	257	275	294	314
Hunting	116	121	129	138	148

Minerals, Energy

History: This segment of the river does contain some evidence of old placer operation; however, mining activity was limited.

Much of the river bottom land in this segment is composed of exposed bedrock and few placer gravel deposits. Ancient streambeds above the river, such as the bench under the Forest Service residential area in Ukiah, do contain samples of very fine gold. There are 21 unpatented claims along this segment (BLM October 13, 1982), but little activity is anticipated due to the lack of placer gravel deposits. Mining activity is limited to occasional recreational mining. One structure, no longer used, exists by the river.

Timber

Suitable Acres: 446
Standing Volume: 1,153 MCF
Working Groups: South Associated (Ponderosa pine, Douglas-fir), Ponderosa pine
Potential Yield: 130 MBF
Programmed Harvest: 130 MBF

This area has the usual amount of insect and disease problems found in unmanaged natural stands of timber. There is long-range potential of spread to adjacent managed stands, but this risk is of minor importance at this time.

Historical-Cultural

There are no known (verified) cultural resource sites in this river area. The cultural sensitivity of this segment is moderate-high The Forest Overview reports several historic cabin sites in this area

Transportation Routes

Existing: Road 55 is a double lane gravel road which runs the full length of this river area on the north side of the river. Recreational traffic is the largest component of the annual traffic for this section of road.

Potential: None. The area north of the river is primarily nonforested while the area south of the river is better accessed for timber harvest from the mountain ridgetops than from the river bottom.

Grazing

Present: The Texas Bar C&H Allotment lies north of the river while the Central Desolation C&H Allotment lies to the south of the river. The boundary between these allotments is fenced and lies close to the river. Some conflicts exist with present use levels and fish habitat (riparian vegetation) which may require additional fencing.

Potential: Present use is near the potential.

WENAHA RIVER

General Setting

Total miles of river: 18.7.
Total miles: National Forest, 17.6; private, 1.1.

Areas included in one-quarter mile corridor on each side of river: National Forest, 5,424 acres; private, 160 acres.

The above miles and acres are inclusive within the National Forest boundary and do not include additional miles and acres on other lands in the wild and scenic rivers legislation P.L. 100-557, The Omnibus Oregon Wild and Scenic Rivers Act of 1988.

Outstandingly Remarkable Values

Scenic, recreation, and fish and wildlife — The river flows between rugged basalt outcrops which rise about 1,600 feet to the plateau above. This is one of the best streams in this part of the state for rainbow trout fishing. The Wenaha River has been designated a U.S.—Canada Treaty stock indicator stream. The federally listed threatened bald eagle occurs as a winter migrant. The upper 81 percent of this segment is within the Wenaha-Tucannon Wilderness and is accessed by trail only.

This area lies in Wallowa County between the junction with the Forest Boundary in Section 1, T.5N., R.42E., W.M., and the junction of the North Fork and the South Fork (Wenaha River) in Section 34, T.6N., R.40E., W.M.

This section of river has an average gradient of 1.1 percent, an average width of 80 feet, and is about 1,800 feet in elevation at the Forest Boundary. The upper 15.1 miles of this section lie within the Wenaha-Tucannon Wilderness, while the lower 3.5 miles serve as a major approach to the east side of the wilderness.

Eligibility Determination

This section of river has a statutory designation as a wild river based on the following attributes and minimum eligibility:

Water Resources Development: Free of impoundment.
Shoreline Development: Essentially primitive.
Accessibility: Generally inaccessible except by trail.
Water Quality: Waters unpolluted.
Classification: Wild.

Description of General Resource

The canyon slopes bordering the river are greater than 60 percent. Basalt outcrops along steep sideslopes create a bench and cliff topography that rises about 1,600 feet to the plateau above.

North of the river, the steep rugged canyon walls are interspersed with rimrocks, open grassy slopes, and scattered stringers of ponderosa pine. The riparian area has a heavy growth of timber and brush of varying widths which include some moist meadows, cottonwood clumps, alder, and blackberry. South of the river, the steep extremely dissected ridge sideslopes support open grassy slopes on south aspects and wide patches and stringers of Douglas-fir on the north aspects.

The riparian habitat is in excellent condition and very important to the area and the region.

Trail 3106 lies about 100 yards north of the river throughout its entire length. There are 11 feeder trails which connect with Trail 3106. The nearest road is over 1 mile removed and more than 1,600 feet higher in elevation.

This entire segment of river is accessible from Trail 3106.

The following are airline miles to nearby population centers: Walla Walla, Washington, 40; Tri-Cities, Washington, 80; Lewiston, Idaho, 40; Pendleton, Oregon, 64; and La Grande, Oregon, 52.

Dependence upon the river for annual recreation use (expressed in RVD's) is as follows: hiking, 1,000; horseback riding, 2,000; fishing, 1,000; hunting, 500; camping, 200; and sightseeing, 200.

Wilderness is the allocation on the upper 15.1 miles of this river, while primitive recreation is the allocation on the remainder. The concept of this later allocation is to provide an area reached only by trail.

At present, there are no commercial uses on the private land. The land is within a grazing allotment. The area has potential for timber harvest.

Water Yield

Annual Flow in Acre Feet (Ac Ft.):		90,579 Ac. Ft.
Seasonal Flow:	Summer and fall average	21,739 Ac. Ft.
	Winter average	28,985 Ac. Ft.
	Spring runoff average	39,855 Ac. Ft.

Water Uses

Reservoirs Below: Nearest is behind the Lower Granite Dam on the Snake River, 110 miles away.

Power Withdrawal: Section 7 of the Wild and Scenic Rivers Act prohibits the Federal Power Commission from licensing the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other works under the Federal Power Act on or directly affecting any designated river. This supersedes the Federal Power Act of June 10, 1920, Power Site Classification No. 242 (PSC 242) withdrawing and reserving a corridor along the river for power development. Public Law 359 of August 11, 1955, opened these lands to mineral entry, with the condition that power rights to the land be retained as per Section 24 of the Federal Power Act.

Irrigation: None.
Domestic Use: None.
Flood Control Needs or Projects: None.
Water Rights: Minimum instream flow requirements for fish – none.

Hydroelectric Potential: The Wild and Scenic River Act protects the free flowing condition of the river.

Water Quality: Good to excellent.

Wildlife

The entire segment of river serves as important and needed big game winter range habitat for deer, elk, and bighorn sheep. The river habitat also serves as habitat for a variety of bird species.

Fish Production – Annual

Anadromous:	Spawning Adults	Smolts
Spring Chinook	280	60,200
Summer steelhead	160	27,000

Treaty: The Wenaha River has been designated a U.S.–Canada Treaty stock indicator stream (Columbia River Inter-Tribal Fish Commission).

Resident: An estimated 1,050 wild, legally harvestable trout are produced annually – no hatchery stocking

T/E Species

Plants: There are no inventoried federally listed T/E plant species within the river area. The likelihood of finding federally listed plants is low. However, several candidate species for listing may be found. Habitat for a number of State of Oregon listed T/E and rare plants exists in the river area, and the likelihood of these areas containing state listed plants is fairly high.

Animals: There is one federally listed wildlife species known to occur within the river area, the threatened bald eagle (*Haliaeetus leucocephalus*). It occurs as a winter migrant in small numbers (8-10 birds) and utilizes suitable large snags as perch trees. While there are no confirmed sightings, there is a possibility that the endangered peregrine falcon (*Falco peregrinus anatum*) occurs within this area.

Recreation

Recreation opportunities include trout fishing, viewing of scenic rugged landscape, big game hunting, primitive camping, viewing big game, hiking, and horseback riding on Trail 3106.

This is a sensitive corridor with visual quality objectives of retention and partial retention outside of the wilderness, and preservation within.

Estimated future demand in recreation visitor days (RVD's):

	Time Periods				
Activity	1981-1990	1991-2000	2001-2010	2011-2020	2021-2030
Hiking	1,197	1,221	1,306	1,396	1,493
Horseback riding	2,394	2,492	2,665	2,850	3,047
Fishing	1,144	1,227	1,312	1,403	1,500
Hunting	583	607	649	694	742
Camping	237	254	272	291	311
Sightseeing	246	277	296	316	338

Minerals, Energy

There has been limited exploration for locatable minerals in this area. No mining claims have been filed along this segment of river.

There are two applications for oil and gas leases that cover all the National Forest land adjacent to the river. Forest Service responses to the Bureau of Land Management will recommend that no surface occupancy be allowed within 100 feet of the river or on slopes greater than 50 percent. In effect, this will restrict surface occupancy within the entire area

Timber

Suitable Acres: 256 (exclusive of wilderness area)
Standing Volume: 683 MCF
Working Group: North Associated (ponderosa pine, Douglas-fir, white fir, larch)
Potential Yield: 75 MBF (excluding wilderness area)
Programmed Harvest: 75 MBF

This area has the usual amount of insect and disease problems found in unmanaged natural stands of timber. There is a long-range potential of spread to adjacent managed stands, but this risk is of minor importance at this time.

Historical-Cultural

There are no known (verified) cultural resources in this river area. This segment's cultural sensitivity is moderate-high based on the Cultural Resource Inventory Plan.

Transportation Routes

Existing: None.

Potential: None.

Grazing

Present: A portion of the river is within the Wenaha C&H Allotment and another portion is bounded by the Eden C&H Allotment. Present use is light to moderate. Increased stocking is not planned.

Potential: Present use is below the potential.

SPECIFIC DESCRIPTION OF VALUES

ASSESSMENT FOR OUTSTANDINGLY REMARKABLE VALUES

Scenic

Criteria for Outstandingly Remarkable Rating

The landscape elements of landform, vegetation, water, color, and related factors result *in notable or exemplary visual features and/or attractions within the geographic region.* When analyzing scenic values, additional factors such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions are viewed may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment length and not common to other rivers in the geographic region.

Criteria for Significant Rating

The landscape elements, although distinctive and interesting, are not dominant, notable, or exemplary with the geographic region.

Evaluation of the Present Situation

The steep canyon slopes and dissected ridges are attractive and interesting features. The timbered slopes with interspersed grassy openings are typical of the northern Blue Mountains.

The river corridor is similar to many other canyons in the region, such as the Touchet River, Little Tucannon River, Meadow Creek, North Fork Asotin Creek, South Fork Asotin Creek, Menatchee Creek, and Crooked Creek.

Conclusion

While the landscape elements in the Tucannon River corridor are interesting, they are not unique or outstandingly remarkable. Scenic value earns a significant rating.

Recreational

Criteria for Outstandingly Remarkable Rating

Recreational opportunities are, or have the potential to be, unique enough to attract visitors from outside of the geographic region. Visitors would be willing to travel long distances to use the river resources for recreational purposes. River-related opportunities could include, but not be limited to sightseeing, wildlife observation, photography, hiking, fishing, hunting, and boating.

Interpretive opportunities may be exceptional and attract or have the potential to attract visitors from outside the geographic region.

The river may provide or have the potential to provide settings for national or regional usage or competitive events.

Criteria for Significant Rating

Recreation opportunities, although of special importance or significance, are not unique within the geographic region. Visitors are primarily from the local area and the area is not considered to be a regional destination attraction

Evaluation of the Present Situation

Recreational use is quite heavy. Elk hunting is very popular, but is not confined to the river corridor or directly related to the river. Elk hunting is heavy all over the Blue Mountains. Trout fishing is popular, mostly for hatchery-stocked legal rainbow trout from the Little Tucannon River downstream through the Wooten Game Range, and in the several man-made impoundments along that section of river. There is some recreational travel, camping, hiking, mushroom picking and wood cutting in and adjacent to the river corridor.

Conclusion

Recreational values and uses are important and regionally significant. They are typical of many other Blue Mountain streams and canyons. There are no outstandingly remarkable recreational resource values.

Geologic

Criteria for Outstandingly Remarkable Rating

The river or the area within the river corridor contains an example(s) of a geologic feature, process, or phenomena that is rare, unusual, one-of-a-kind, or unique to the geographic region. The feature(s) may be in an unusually active stage of development, represent a "textbook" example and/or represent a unique or rare combination of geological features (erosional, volcanic, glacial, and other geologic structures.)

Criteria for Significant Rating

Feature, process or phenomena, although of public and/or scientific interest, is not unique within the geographic region.

Evaluation of the Present Situation

The Tucannon River cuts a deep canyon through the Columbia River basalt flows. The basalt outcrops, gravel and cobble floodplains, and the river bed are similar to the Touchet River, Meadow Creek, Asotin Creek, Menatchee Creek, and Crooked Creek. The floodplain at the Forest Boundary is somewhat broader, but otherwise very similar.

Conclusion

There are no unique or unusual features. The Tucannon River has no outstandingly remarkable geologic features.

Fisheries

Criteria for Outstandingly Remarkable Rating

Fish values may be judged on the relative merits of either fish populations or habitat or a combination of these river-related conditions.

Populations. The river is nationally or regionally an important producer of resident and/or anadromous fish species. Of particular significance is the presence of wild stocks and/or threatened and endangered species.

Habitat. The river provides exceptionally high quality habitat for fish species indigenous to the region. Of particular significance is habitat for wild stocks and/or federally listed or candidate threatened and endangered species.

Criteria for Significant Rating

The river is regionally or locally recognized as one of several producers of resident and/or anadromous fish species and provides quality habitat for fish species indigenous to the region.

Evaluation of the Present Situation

The Tucannon River has resident populations of rainbow trout and bull trout and has wild anadromous runs of summer steelhead and spring Chinook salmon. The Tucannon Fish Hatchery propagates both anadromous species to supplement the wild runs. Estimated wild runs upstream from the Forest Boundary are 200 spawning adult salmon and 500 steelhead. The State of Washington Department of Game stocks several thousand legal hatchery rainbow trout.

Wild runs of one or both anadromous species occur in the Touchet River, Meadow Creek, Little Tucannon River, Cummings Creek, Charley Creek, Asotin Creek, Menatchee Creek, Crooked Creek, and the Wenaha River. These rivers and creeks also support significant populations of resident rainbow trout and bull trout.

Conclusion

While these populations are important and regionally significant, they are neither unique or remarkably outstanding. The Tucannon River is recognized as one of several area streams to produce these species. The fish habitat is neither exceptional nor highly productive.

Wildlife

Criteria for Outstandingly Remarkable Rating

Wildlife values may be judged on the relative merits of either wildlife populations or habitat— or a combination of these conditions.

Populations. The river or area within the river corridor contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique or populations of federally listed or candidate threatened and endangered species.

Habitat. The river or area within the river corridor provides exceptionally high quality habitat for wildlife of national or regional significance, or may provide unique habitat or a critical link in habitat conditions for federally listed or candidate threatened and endangered species. *Contiguous habitat conditions are such that the biological needs* of the species are met.

Criteria for Significant Rating

The river or area within the river corridor contains regionally or locally important populations of indigenous wildlife species, and provides quality habitat for those species.

Evaluation of the Present Situation

The river corridor contains populations of Rocky Mountain elk, California bighorn sheep, mule deer, whitetail deer, black bear, and cougar typical of the northern Blue Mountains. The bald eagle has been sighted as an occasional migrating visitor. It has not been known to nest or overwinter in the area. Habitats in the river corridor are similar to riparian area in the other streams previously mentioned. Both summer and winter ranges are included.

Conclusion

Wildlife populations and habitats are regionally important, but are not outstandingly remarkable. Wildlife in the Tucannon River corridor is rated significant.

Prehistoric, Cultural	Criteria for Outstandingly Remarkable Rating The river or area within the river corridor contains a site(s) where there is evidence of occupation or use by native Americans, sites must be rare, one-of-a-kind, have unusual characteristics or exceptional human interest value(s). Sites may have national or regional importance for interpreting prehistory; may be rare and represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; or may have been used by cultural groups for rare or sacred purposes. Of particular value will be pristine sites that have not been disturbed. Criteria for Significant Rating The river or area within the river corridor contains sites which are of public and/or scientific interest, but are not unique within the geographic region. Evaluation of the Present Situation The river corridor was used by Native Americans for hunting, fishing and gathering. The River has also been used by European Americans from early settlement up to the present day. There are no pristine areas. Prehistoric sites are not unique or rare. There are numerous sites to the east in the Asotin Creek drainage and south in the Wenaha River. Conclusion The Tucannon River corridor contains significant, but not outstandingly remarkable prehistoric cultural resources.
Historic, Cultural	Criteria for Outstandingly Remarkable Rating The river or area within the river corridor contains a site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare, unusual or one-of-a-kind in the region A historic site(s) and/or feature(s) in most cases is 50 years old or older. Of particular significance are sites or features listed in, or are eligible for inclusion in, the National Register of Historic Places. Criteria for Significant Rating The river or area within the river corridor contains site(s) or feature(s) which are of public and/or scientific interest, but are not unique within the geographical region. Evaluation of the Present Situation The lower river corridor was settled by European Americans. Old homesteads have been acquired by the State of Washington Department of Wildlife and are managed as fish and wildlife habitat. There are no unique or unusual historic sites or features. There are no sites listed on the National Register of Historic Places. Conclusion There are no outstandingly remarkable historic cultural resources in the Tucannon River corridor.
Other Resource Values	There are no outstandingly remarkable values present in hydrologic, paleontologic, botanic, ecologic, or other resources. OVERALL CONCLUSION The Tucannon River corridor contains no outstandingly remarkable resource values.

TUCANNON RIVER

That reach or part of the river which lies within the boundaries of the Forest can logically be divided into the following three segments: (1) Origin to Garfield-Columbia County line, (2) Garfield-Columbia County line to Panjab Creek, and (3) Panjab Creek to the Forest Boundary.

SEGMENT 1 RIVER ORIGIN TO GARFIELD-COLUMBIA COUNTY LINE

General Setting

Total miles of river: 7.3.
Total miles: National Forest, 7.3.

Acres included in one-quarter mile corridor on each side of river: National Forest, 2,320.

This area lies in Garfield County between its origin in Section 36, T.8N., R.42E., W.M., and the junction with the Garfield-Columbia County line on the west edge of Section 7, T.8N., R.42E., W.M.

This section of river has an average gradient of 5.4 percent, an average width upstream from Bear Creek of 13 feet and downstream of 20 feet, and is about 3,600 feet in elevation at the county line.

Eligibility Determination

This section of river has the following attributes and eligibility:

Water Resources Development: Free of impoundment.
Shoreline Development: Essentially primitive.
Accessibility: Generally inaccessible except by trail.
Water Quality: Water unpolluted.
WSR Eligibility: Ineligible.

Description of General Resources

The canyon slopes bordering the river are mostly steep, dissected ridge sideslopes with basalt outcrops which create bench and cliff topography. Nearly all the canyon slopes are greater than 60 percent. The mountain ridgetops, which are several hundred feet above the river near its origin, are about 1,800 feet above the river at the Garfield-Columbia County line.

Vegetation on the south-facing slopes is mostly grass-forb or grass-shrub mixtures. North-facing slopes are densely timbered with associated species (firs, spruce, larch) and, near the river, some ponderosa pine. The riparian area includes some moist meadows, cottonwood clumps, alder, and other shrubs in addition to dense stands of fir and ponderosa pine. The riparian habitat is in excellent condition and very important to the area and the region.

Trail 3135 lies on the north side of the river between the Garfield-Columbia County line and Bear Creek. The average distance separating the river and trail is 100 yards. At Bear Creek, the trail crosses the Tucannon River becoming Trail 3110 and climbs the canyon slopes south of the river to the plateau. There is a gravel road, 4030, on the plateau beyond the origin of the river which, at one point, passes within one-quarter mile of the river. Road 40 lies on the plateau to the east of the river; distance from the river varies from one-quarter to 2 miles away.

The lower portion of this river segment is accessible from Trail 3135.

The following are airline miles to nearby population centers: Walla Walla, Washington, 40; Tri-Cities, Washington, 80; Lewiston, Idaho, 30; Pendleton, Oregon, 68; and La Grande, Oregon, 64.

Dependence upon the river for annual recreation use (in RVD's by activity) is as follows: motorcycle travel, 600; hiking, 900; horseback riding, 960; fishing, 960; camping, 660; and hunting, 1,920.

The upper 2 miles of this segment (from the origin downstream) are allocated to "resource production-elk" north of the river, and "limited access-elk" south of the river. The concept of these allocations is to provide optimum elk habitat. In addition, limited access will close existing and future nondesignated roads.

The remainder of this segment was part of the Upper Tucannon Roadless Area referred to in Conference Report No. 95-861, dated January 1, 1978, on the Endangered American Wilderness Act of 1978. This area is being managed as the Upper Tucannon Special Management Area in accordance with the intent of the conference committee. The conference committee identified some stringent restrictions for road construction and timber harvest in this area.

Water Yield

Annual Flow in Acre Feet (Ac. Ft.):		17,520 Ac. Ft.
Seasonal Flow:	Summer and fall average	4,380 Ac. Ft.
	Winter average	4,906 Ac. Ft.
	Spring runoff average	8,234 Ac. Ft.

Water Uses

Reservoirs Below: Nearest is behind Lower Monument Dam on the Snake River—74 miles away.
Power Withdrawal: None.
Irrigation: None.
Domestic Uses: None.
Flood Control Needs or Projects: None.
Water Rights: Minimum instream flow requirements for fish—none.
Hydroelectric Potential: There are no current applications under FERC regulations.
Water Quality: Good to excellent, although there is occasional high suspended sediment loading due to two major sluice sources.

Wildlife

This river segment provides important summer range habitat for big game species and a migrational corridor during late fall. A variety of smaller bird species and larger raptors also utilized the river corridor for nesting and feeding.

Fish Production — Annual

Anadromous:	Spawning Adults	Smolts
Spring Chinook	60	5,700
Summer steelhead	150	22,500

Resident: An estimated 1,095 wild, legally harvestable trout are produced annually—no hatchery stocking.

T/E Species

Plants: There are no inventoried federally listed T/E plant species within the river area. The likelihood of finding federally listed plants is low. However, habitat for a number of State of Washington list T/E and rare plants exists in the river area, and the likelihood of these areas containing state listed plants is fairly high.

Animals: There is one federally listed species known to occur within the river area, the threatened bald eagle (*Haliaeetus leucocephalus*). It occurs as a winter migrant and utilizes suitable large snags as perch trees. The actual or anticipated level of use by eagles is low.

Recreation

Recreation opportunities include hiking, horseback riding, and motorcycle travel on Trail 3135 for 3.6 miles; approximately 4.5 miles of cross-country hiking with no trails; primitive camping; trout fishing; scenic landscape viewing; and big game hunting.

Estimated future demand in recreation visitor days (RVD's):

Activity	Time Periods 1981-1990	1991-2000	2001-2010	2011-2020	2021-2030
Motorcycle travel	699	772	825	882	943
Hiking	1,077	1,099	1,175	1,256	1,343
Horseback riding	1,149	1,196	1,279	1,368	1,463
Fishing	1,099	1,179	1,261	1,348	1,441
Camping	783	840	898	960	1,026
Hunting	2,237	2,328	2,489	2,661	2,845

Minerals, Energy

There is little history of exploration for locatable minerals. There are no recorded mining claims.

Several applications for oil and gas leasing cover the entire study corridor. Recommendations on these applications have not been forwarded to the Bureau of Land Management as they also contain land within the Wenaha-Tucannon Wilderness and the current Appropriations Act prohibits expenditure of FY '83 funds for processing of lease applications within wilderness areas. Standard recommendations would include the restriction of surface occupancy within 100 feet of the river and on slopes in excess of 50 percent. This would effectively restrict the entire study corridor from surface occupancy.

Timber

Suitable Acres: 2,267
Standing Volume: 7,804 MCF
Working Group: North Associated (Ponderosa pine, Douglas-fir, white fir, larch, Engelmann spruce, and subalpine fir)
Potential Yield. 793 MBF
Programmed Harvest: 793 MBF

This area has the usual amount of insect and disease problems found in unmanaged natural stands of timber. There is long-range potential of spread to adjacent managed stands, but this risk is of minor importance at this time.

Historical-Cultural

There are no verified cultural resources in this river area. Cultural sensitivity of this segment is rated as moderate-high based on the Cultural Resource Inventory Plan.

Transportation Routes

Existing: At the origin end of this river area, there are two closed local roads which extend about one-half mile into this area. These roads will undoubtedly be used for future logging.

Potential: None. Timber on the canyon slopes bordering the river can be better accessed from the mountain ridgetops than from the river bottom.

Grazing

Present: Not presently allocated.

Potential: There is potential sheep use following logging of adjacent areas. The estimated potential summer use is 1 acre per 0.05 AUM.

SEGMENT 2 GARFIELD-COLUMBIA COUNTY LINE TO PANJAB CREEK

General Setting

Total miles of river: 5.1.
Total miles: National Forest, 5.1.

Acres in one-quarter mile corridor on each side of river: National Forest, 1,599.

This area lies in Columbia County between the junction with the Garfield-Columbia County line on the west edge of Section 7, T.8N., R.42E., W.M., and the junction of Panjab Creek in Section 5, T.8N., R.41E., W.M.

This section of river has an average gradient of 2.2 percent, an average width of 26 feet, and is about 3,000 feet in elevation at Panjab Creek.

The north shore of the river, through this segment, is a part of the north boundary of the Wenaha-Tucannon Wilderness. All of this section of river is within the Wenaha-Tucannon Wilderness.

Eligibility Determination

This section of the river has the following attributes and eligibility:

Water Resource Development: Free of impoundment.
Shoreline Development: Largely primitive and undeveloped.
Accessibility: Accessible in places by road.
Water Quality: Waters unpolluted.
WSR Eligibility: Ineligible.

Description of General Resource

The canyon slopes bordering the river are nearly all steep, greater than 60 percent, rise 1,800 to 2,000 feet to the mountain ridgetops; and most are extremely dissected ridge sideslopes.

Vegetation on the south-facing slope is mostly grass-forb or grass-shrub mixtures. North-facing slopes are densely timbered with associated species (firs, spruce, larch) with ponderosa pine near the river. The riparian area includes some moist meadows, cottonwood clumps, alder, and other shrubs. Riparian habitat is in excellent condition and very important to the area and region.

Road 4712 runs along on the north side of the river from Panjab Creek to within about one-half mile of the Garfield-Columbia County line. The distance between Road 4712 and the river is about one-quarter mile. Trail 3129 crosses the river at Panjab Creek, and Trail 3135 picks up where Road 4712 ends and follows closely along the river to the Garfield-Columbia County line.

The entire length of this river segment is accessible from Road 4712 or Trail 3135.

The following are airline miles to nearby population centers: Walla Walla, Washington, 30; Tri-Cities, Washington, 70; Lewiston, Idaho, 36; Pendleton, Oregon, 64; and La Grande, Oregon, 64.

Dependence upon the river for annual recreation use (in RVD's by activity) is as follows: automobile travel, 100; fishing, 300; camping, 600; picnicking, 150; hunting, 1,400; sightseeing, 100; and gathering forest products, 500.

South of the river between Panjab Creek and the Garfield-Columbia County line lies the Wenaha-Tucannon Wilderness. North of this section of river, the area is allocated to resource production-elk. The concept of this allocation is to provide optimum elk habitat.

Water Yield

Annual Flow in Acre Feet (Ac. Ft.):		33,288 Ac. Ft.
Seasonal Flow:	Summer and fall average	8,322 Ac. Ft.
	Winter average	9,321 Ac. Ft.
	Spring runoff average	15,645 Ac. Ft.

Water Uses

Reservoirs Below: Nearest is behind Lower Monument Dam to the Snake River—69 miles away.
Power Withdrawal: None.
Irrigation: None.
Domestic Uses: None.
Flood Control Needs or Projects: None.
Water Rights: Minimum instream flow requirements for fish - none.
Hydroelectric Potential: There are no current applications under FERC regulations.
Water Quality: Good to excellent.

Wildlife

About half of the north bank of the river segment serves as important winter habitat for elk and deer. Other wildlife species include a variety of passerine and raptorial bird species.

Fish Production -- Annual

Anadromous:	Spawning Adults	Smolts
Spring Chinook	40	3,800
Summer steelhead	250	37,500

Resident: An estimated 1,539 wild, legally harvestable trout are produced annually—no hatchery stocking.

T/E Species

Plants: There are no inventoried federally listed T/E plant species within the river area. The likelihood of finding federally listed plants is low. However, habitat for a number of State of Washington listed T/E and rare plants exists in the river area, and the likelihood of these areas containing state listed plants is fairly high.

Animals: There is one federally listed species known to occur within the river area, the threatened bald eagle (*Haliaeetus leucocephalus*). It occurs as a winter migrant and utilizes suitable large snags as perch trees. The actual or anticipated level of use by eagles is low.

Recreation

Recreation opportunities include trout fishing, dispersed camping (elk hunting), and wilderness experience.

The visual resource is sensitivity level 2 from Panjab Creek to the end of Road 4712. The visual quality objective is partial retention foreground.

Estimated future demand in recreation visitor days (RVD's):

Activity	Time Periods 1981-1990	1991-2000	2001-2010	2011-2020	2021-2030
Auto travel	123	128	137	146	156
Fishing	343	368	393	420	449
Camping	712	764	817	874	935
Picnicking	176	194	207	221	236
Hunting	1,631	1,698	1,816	1,942	2,077
Sightseeing	123	128	137	146	156
Gathering For. Prod.	583	644	689	737	788

Minerals, Energy

There is little history of locatable mineral exploration, and there are no recorded mining claims.

There are several applications for oil and gas leasing which cover the entire area. Recommendations on these applications have not been forwarded to the Bureau of Land Management as they also contain land within the Wenaha-Tucannon Wilderness and the current Appropriations Act prohibits expenditure of FY '83 funds for processing of lease applications within wilderness areas. Standard recommendations would include the restriction of surface occupancy within 100 feet of the river and on slopes in excess of 50 percent. This would effectively restrict the entire study corridor from surface occupancy.

Timber

Suitable Acres: 479 (south of river in this segment is statutory wilderness)
Standing Volume: 1,549 MCF
Working Group: North Associated (Ponderosa pine, Douglas-fir, white fir, larch, Engelmann spruce, and subalpine fir)
Potential Yield: 153 MBF
Programmed Harvest: 153 MBF.

This area has the usual amount of insect and disease problems found in unmanaged natural stands of timber. There is long-range potential of spread to adjacent managed stands, but this risk is of minor importance at this time.

Historical-Cultural

There are no verified cultural resources in this river area. Cultural sensitivity of this segment is rated as moderate-high based on the Cultural Resource Inventory Plan.

Transportation Routes

Existing: Road 4712 is a single lane gravel road with turnouts, which runs nearly the full length of this river area on the north side of the river. The primary use of this road is for recreation activities.

Potential: None. The river and the slopes south of the river are in the Wenaha-Tucannon Wilderness. If further access is required to harvest timber on the slopes north of the river, it can be better provided from the mountain ridgetops than from the river bottom.

Grazing

Present: This area lies in the Pomeroy C&H Allotment. Use is moderate on the north side of the river. The south side is heavily timbered and steep, and consequently receives little use.

Potential: There are no immediate plans to increase use. There is a potential for increased grazing use.

SEGMENT 3 PANJAB CREEK TO FOREST BOUNDARY

General Setting

Total miles of river: 8.4.
Total miles: National Forest, 0.9; State of Washington, 6.5; and private, 1.0.

Acres included in one-quarter mile corridor on each side of river: National Forest, 929; State of Washington, 1,583; and private, 200.

This area lies in Columbia County between the junction with Panjab Creek in Section 5, T.8N., R.41E., W.M., and the Forest Boundary on the north edge of Section 2, T.9N., R 41E., W.M.

This section of river has an average gradient of 1.6 percent, an average width of 37 feet, and is about 2,300 feet in elevation at the Forest Boundary.

Eligibility Determination

This section of river has the following attributes and eligibility:

Water Resources Development: Some impoundment or diversion in the past.
Shoreline Development: Some development.
Accessibility: Readily accessible by road.
Water Quality: Waters unpolluted.
WSR Eligibility: Ineligible.

Description of General Resource

The canyon slopes bordering the river are nearly all steep (greater than 60 percent), rise 1,800 to 2,000 feet to mountain ridgetops, and most are extremely dissected ridge sideslopes.

Vegetation on the south-facing slopes is mostly grass-forb or grass-shrub mixtures. North-facing slopes are densely timbered with associated species (firs, spruce, larch) with ponderosa pine near the river. The riparian area includes some moist meadows, cottonwood clumps, alder, and other shrubs. The riparian habitat is in excellent condition and very important to the area and the region.

Road 47 lies within one-quarter mile of the river for the 8 4 miles between the Forest Boundary and Panjab Creek. Trail 3129 crosses the river at Panjab Creek.

The entire length of this river segment is accessible from Road 47.

The following are airline miles to nearby population centers: Walla Walla, Washington, 30; Tri-Cities, Washington, 70; Lewiston, Idaho, 36; Pendleton, Oregon, 64; and La Grande, Oregon, 64.

Dependence upon the river for annual recreation use (in RVD's by activity) is as follows: automobile travel, 1,400; fishing, 2,700; camping, 4,500; picnicking, 1,500; hunting, 700; sightseeing, 1,400; and gathering forest products, 250.

Most of this river segment lies either in state or private land which is confined to the valley bottom. Beyond this other ownership, nearly all the land is allocated to Resource Production - Visual. The concept of this allocation is to optimize timber production on commercial forest lands. In addition, three relatively small areas of land have been allocated to the developed sites at Panjab Picnic Site, Tucannon Campground, and Tucannon Guard Station. The concept of this allocation is to provide for vehicle-oriented picnicking and camping.

All the state land is included in the William T. Wooten State Game Range, administered by the State of Washington Department of Game. Included on these lands are four reservoirs for public fishing and the Camp Wooten Environmental Learning Center.

The private lands have no commercial uses on them at present. There are several shacks located here. The land is within a grazing allotment. The area has the potential for either a resort or subdivision.

Water Yield

Annual Flow in Acre Feet (Ac. Ft.):		70,324 Ac. Ft.
Seasonal Flow:	Summer and fall average	17,581 Ac. Ft.
	Winter average	19,691 Ac. Ft.
	Summer runoff average	33,052 Ac. Ft.

Water Uses

Reservoirs Below: Nearest is behind Lower Monument Dam on the Snake River, 57 miles away.
Power Withdrawal: None.
Domestic Uses: None.
Flood Control Needs: None.
Flood Control Projects: This river segment has been rechanneled and diked as a result of 1964-65 floods.
Water Rights: State of Washington Department of Game diverts water from the river to four reservoirs for put and take rainbow trout fishing. Water rights for storage are 21.5 AF for a reservoir in Section 15, T.9N., R.41E. (Big Four), and 22.9 AF for a reservoir in Section 3, T.9N., R.41E. (Watson).
Hydroelectric Potential: There are no current applications under FERC regulations.
Water Quality: Good to excellent.

Wildlife

This entire segment of river serves as important winter range habitat for elk and deer. Animals can often be seen on the open slopes above the river. Many small passerine and larger raptors use this river corridor for feeding and nesting.

Fish Production – Annual

Anadromous:	Spawning Adults	Smolts
Spring Chinook	100	9,500
Summer steelhead	100	15,000

Resident: An estimated 2,529 wild, legally harvestable trout are produced annually. The State of Washington Department of Game stocks several thousand hatchery legal rainbow trout.

T/E Species

Plants: There are no inventoried federally listed T/E plant species within the river area. The likelihood of finding federally listed plants is low. However, habitat for a number of State of Washington listed T/E and rare plants exists in the river area, and the likelihood of these areas containing state listed plants is fairly high.

Animals: There is one federally listed species known to occur within the river area, the threatened bald eagle (*Haliaeetus leucocephalus*) It occurs as a winter migrant and utilizes suitable large snags as perch trees.

Recreation

Recreation opportunities include trout fishing, several state picnic and camp sites, scenic viewing from Road 47, a State Organization Camp and Environmental Learning Center, four state public fishing reservoirs, one developed Forest Service campground, and one Forest Service picnic site.

The visual resource is sensitivity level 1 from Panjab Creek to the Forest Boundary. The visual quality objective is retention and partial retention.

Estimated future demand in recreation visitor days (RVD's):

Activity	Time Periods 1981-1990	1991-2000	2001-2010	2011-2020	2021-2030
Auto travel	1,722	1,941	2,075	2,219	2,373
Fishing	3,090	3,314	3,544	3,790	4,053
Camping	5,339	5,726	6,123	6,547	7,000
Picnicking	1,764	1,949	2,084	2,228	2,382
Hunting	116	121	129	138	148
Sightseeing	1,722	1,941	2,075	2,219	2,373
Gathering For. Prod.	291	322	344	368	393

Minerals, Energy

There is little evidence of exploration for locatable minerals. There are no recorded mining claims within the corridor.

There are two applications for oil and gas leasing which cover all the National Forest System lands within the study corridor. Recommendations provided to the Bureau of Land Management restrict surface occupancy within view of Road 47, the Tucannon Campground, 100 feet of the Tucannon and the Little Tucannon rivers, and on slopes in excess of 50 percent.

Conference Report 95-626 may also place some restrictions on exploration and/or development activity

Timber

Suitable Acres: 470
Standing Volume: 1,520 MCF
Working Group: North Associated (Ponderosa pine, Douglas-fir, white fir, larch, Engelmann spruce, and subalpine fir)
Potential Yield: 150 MBF
Programmed Harvest: 150 MBF

This area has the usual amount of insect and disease problems found in unmanaged natural stands of timber. There is long-range potential of spread to adjacent managed stands, but this risk is of minor importance at this time.

Historical-Cultural

The cultural sensitivity of this segment is high according to the Cultural Resource Inventory Plan. The Forest Overview reports a variety of cultural resource sites in the area including the following: A sawmill/lumbering site, a house and barn site, mining activity, and a Forest Service administrative site.

Transportation Routes

Existing: Road 47 is a double lane gravel road which runs the full length of this river area on the west side of the river. The primary use of this road is for recreation activities which include the Camp Wooten Environmental Learning Center and the Washington Department of Game public fishing reservoirs. Road 4620 leaves Road 47 in Section 30 and eventually rises to the plateau above. In addition, there are five local roads which leave Road 47, including three to the east across the river utilized for timber removal.

Potential: None. About 77 percent of the river miles in this area are in the Wooten State Game Range. Access is already present to remove timber from the slopes beyond the state land.

Grazing

Present: State land is presently unused except for incidental fall use. National Forest lands are in the Pomeroy C&H Allotment. There is some cross canyon fencing in this area. Rest rotation grazing provides moderate utilization during years of use.

Potential: Present use is near the potential estimated stocking rate of 1 acre per 0.1 AUM.

APPENDIX H

APPENDIX H

RESEARCH NATURAL AREAS

TABLE OF CONTENTS

	Page
Introduction	H-1
Direction for Establishment	H-1
Needs to be Considered	H-1
The Element Approach to Developing RNA Needs	H-1
Element Needs	H-2
Area Needs	H-9
Potential to Fulfill Area Needs	H-11
Current Management	H-11
Implications for Research	H-11
Protection and Management Standards	H-12
Potential Establishment Problems	H-13
Maps (see next page for list of maps)	H-13
Legal Descriptions	H-23
References	H-26

Page

LIST OF TABLES

Table H-1	A Summary of Elements Needing Representation in RNA's — Region 6 and Area 3	H-2
Table H-2	A Complete Listing of Area 3 Element Needs for RNA Representation	H-3
Table H-3	A Summary of RNA's Needed — Region 6 and Area 3	H-9
Table H-4	List of RNA's Recommended for Area 3	H-10

LIST OF MAPS

Figure H-A	Umatilla National Forest — Approximate Location of Research Natural Areas	H-14
Map 1	Pataha Bunchgrass RNA Revised Description	H-15
Map 2	Rainbow Creek RNA Revised Description	H-16
Map 3	Elk Flats Meadow RNA Candidate	H-17
Map 4	Elk Flats-Wenaha Breaks RNA Candidate	H-18
Map 5	Kelly Creek Butte RNA Candidate	H-19
Map 6	Mill Creek Watershed RNA Candidate	H-20
Map 7	Vinegar Hill RNA Candidate	H-21
Map 8	Birch Creek Cove RNA Candidate	H-22

APPENDIX H

RESEARCH NATURAL AREAS (RNA's)

INTRODUCTION

A Research Natural Area is defined as "a naturally occurring physical or biological unit where natural conditions are maintained insofar as possible." The natural features are preserved for research and educational purposes. The features to be preserved may be important or unique ecosystems, habitats, or organisms, and may be terrestrial, freshwater, or marine.

Most tracts selected as Research Natural Areas are those where the features of interest are in as nearly an undisturbed state or natural condition as can be found. They do not necessarily have to be pristine, however, since examples of many ecosystems which are essentially free of human disturbance no longer exist Research Natural Areas are, ideally, sufficiently large to protect the feature of interest from significant unnatural influences.

The objectives of establishing Research Natural Areas are critical to understanding their importance in overall land use planning As stated in 1968 by the Federal Committee on Research Natural Areas, they are: (1) Preservation of examples of all significant natural ecosystems for comparison with those influenced by man, (2) provision of educational and research areas for ecological and environmental studies, and (3) preservation of gene pools for typical and rare and endangered plants and animals (USDA Forest Service 1975).

DIRECTION FOR ESTABLISHMENT

The Forest is required to provide for the establishment of Research Natural Areas through forest planning (USDA Forest Service 1982).

Selection and establishment of Research Natural Areas shall be a part of the continuing land and resource management planning process for National Forest System lands. Forest plans will identify the situations that should be reserved in natural areas and will propose natural areas to include these situations. Research activities planned for the area and its administration should be reflected in the Forest Plan. The Plan shall also provide the specific management and protection direction needed for each area. Action to establish proposed Research Natural Areas will proceed after each proposed area has gone through the planning process (USDA Forest Service 1979).

NEEDS TO BE CONSIDERED

THE ELEMENT APPROACH TO DEVELOPING RNA NEEDS (USDA FOREST SERVICE 1975)

Elements are the basic units which must be represented in a natural area system. An element can be an ecosystem, community, habitat, or organism. Organisms are generally recognized implicitly in elements identified for ecosystems, communities, or habitats. However, where an organism is of particular scientific significance or is rare or threatened, it may receive explicit recognition as an element.

A Research Natural Area "need" is typically an aggregation of several elements which need representation. This, of course, assumes that these elements can be found together. The listed needs are simply guides intended mainly to encourage, insofar as possible, the establishment of multielement Research Natural Areas It may or may not prove possible to find an RNA need with the described aggregation of elements when a site is actually sought in the field. In all cases, it must be remembered that it is the individual element which is the basic unit requiring representation

ELEMENT NEEDS

Representatives of various Federal agencies, the Nature Conservancy, and the states of Oregon and Washington together form the Pacific Northwest Research Natural Area Committee which in 1975 produced *Research Natural Area Needs in the Pacific Northwest* (USDA Forest Service 1975). The document lists and describes the elements, which originally were identified to represent a minimal natural area system for the Ochoco, Blue, and Wallowa Mountains Province, hereafter referred to as the Province (USDA Forest Service 1981a). This listing was by terrestrial and aquatic (freshwater) ecosystems. Table H-1 summarizes these element needs as originally identified for Region 6 and the Province.

TABLE H-1

NUMBER OF TERRESTRIAL AND AQUATIC PLANTS ELEMENTS OR ECOSYSTEMS NEEDING REPRESENTATION IN RESEARCH NATURAL AREAS IN OREGON AND WASHINGTON AND NUMBER ALREADY FILLED OR REPRESENTED IN EXISTING RESERVES

Province	Terrestrial Elements		Aquatic (freshwater) Elements	
	Total	Filled	Total	Filled
Ochoco, Blue, and Wallowa Mountains	79	13	23	5
Total	646	169	265	46

These listings were later supplemented by a list of 34 additional terrestrial elements. The list was prepared by Charles G. Johnson, Jr , Ecologist for Area 3 (Johnson 1981, USDA Forest Service 1981c), who with Sarah Greene, RNA Scientist for the PNW Region, is assisting forest planners in northeast Oregon to incorporate RNA's in the forest plans (USDA Forest Service 1981b). Element needs were again modified in 1988 following the completion of *Plant Associations of the Wallowa-Snake Province* (Johnson and Simon 1987).

Information on element needs is updated every other year (in Oregon, even years; Washington, odd years) through the State Natural Heritage Plans.

These state plans have received localized information on the Ochoco, Blue, and Wallowa Mountains Province from Forest Service Area 3 Ecologist, Charles Johnson. This information has caused the modification of some elements previously identified, as well as the identification of some additional elements.

The revised list of RNA element needs for this Province produced by these State Natural Heritage Plans is being used as the base document for the RNA needs for the national forests in this Province. This list currently recognizes 83 elements for the Province (Table H-2). Hereafter, these will be the elements referred to in this document.

Additional information will be available in 1990 from the update of *Plant Communities of the Blue Mountains in Eastern Oregon and Southeastern Washington* (Hall 1973).

TABLE H-2

OCHOCO, BLUE, AND WALLOWA MOUNTAINS PROVINCE
ELEMENTS NEEDING REPRESENTATION IN RNA's [1]
(AREA 3)

TERRESTRIAL ECOSYSTEMS

Agency	Priority	Element	Name	Present Representation
			WESTERN JUNIPER ZONE	
FS,BLM[2]	H	1.	Western juniper/bluebunch wheatgrass community	None
	+	2.	Western juniper/low sagebrush/bunchgrass community	Shaketable PRNA
	+	3.	Western juniper/big sagebrush community	Dry Mountain PRNA
	+	4.	Western juniper/mountain-mahogany community	Baldy Mountain PRNA
			PONDEROSA PINE ZONE	
FS	H	5.	Ponderosa pine/bunchgrass communities in the Blue Mountains with separate areas of Idaho fescue and bluebunch wheatgrass	None
		5a.	Ponderosa pine/Idaho fescue	Little Granite Creek PRNA Lightning Creek PRNA
		5b.	Ponderosa pine/bluebunch wheatgrass	Little Granite Creek PRNA
	+	6	Ponderosa pine/bitterbrush/bunchgrass communities	Silver Creek PRNA
	*	7.	Ponderosa pine/bitterbrush-mountain mahogany/sedge community	Dry Mountain PRNA Stinger Creek PRNA
			DOUGLAS-FIR ZONE	
	*	8.	Douglas-fir–ponderosa pine/ pinegrass community	Canyon Creek RNA Ochoco Divide RNA Stinger Creek PRNA
	+	9.	Douglas-fir–ponderosa pine/common snowberry community	Mill Creek Watershed PRNA (WA)
FS	H	10.	Douglas-fir–ponderosa pine/ mountain snowberry community	None
	+	11.	Douglas-fir/mallow ninebark	Mill Creek Watershed PRNA (WA) Pleasant Valley PRNA
	+	12.	Douglas-fir–ponderosa pine/ elk sedge	Government Draw PRNA Stink Creek PRNA

1 (USDA FOREST SERVICE 1981a)
2 See explanation of abbreviations and symbols at bottom of page A-9

TABLE H-2 (Cont'd.)
OCHOCO, BLUE, AND WALLOWA MOUNTAINS PROVINCE

TERRESTRIAL ECOSYSTEMS

Agency	Priority	Element	Name	Present Representation
			GRAND FIR ZONE	
	*	13.	Mixed conifer forest with western larch dominance	Rainbow Creek RNA (WA) Canyon Creek RNA
	*	14.	Mixed conifer forest with western white pine dominance	Rainbow Creek RNA (WA)
	*	15	Grand fir/thinleaf huckleberry forest	Duck Lake PRNA Elk Flats-Wenaha PRNA Rainbow Creek RNA (WA)
FS	H	16.	Grand fir/grouse huckleberry	None
	+	17.	Grand fir/twinflower forest	Elk Flats-Wenaha Breaks PRNA
	+	18.	Grand fir/pinegrass	Dugout Creek PRNA
			SUBALPINE FIR ZONE	
	+	19.	Engelmann spruce–subalpine fir/ huckleberry forest	Point Prominence PRNA
	+	20.	Engelmann spruce–subalpine fir/ red mountain-heather forest	West Razz Lake PRNA
		20a.	Subalpine fir/fool's huckleberry	Little Granite PRNA
	*	21.	Mountain hemlock/huckleberry forest	Indian Creek RNA
	+	22.	Whitebark pine community	Boner Flat PRNA Vinegar Hill PRNA
	+	23.	Limber pine community	Baldy Mountain PRNA
			GRASSLAND COMMUNITIES	
	+	24.	Buckwheat/Sandberg's bluegrass complex	Pleasant Valley PRNA
	+	25.	Buckwheat/bluebunch wheatgrass complex	Lake Fork PRNA
		25a.	Bunchgrass on varying soil depths in Blue Mountains	Pataha Bunchgrass RNA (WA)
FS,BLM, PVT	H	26.	Bluebunch wheatgrass–Idaho fescue–silky lupine community	None
	+	27.	Bluebunch wheatgrass–Idaho fescue–arrowleaf balsamroot community	Haystack Rock PRNA Horse Pasture Ridge PRNA

TABLE H-2 (Cont'd.)
OCHOCO, BLUE, AND WALLOWA MOUNTAINS PROVINCE

TERRESTRIAL ECOSYSTEMS

Agency	Priority	Element	Name	Present Representation
	+	28.	Sandberg's bluegrass–onespike oatgrass community	Government Draw PRNA Vance Knoll PRNA
	+	29.	Snake River grassland mosaic including, sand dropseed, Sandberg's bluegrass, bluebunch wheatgrass, red threeawn, and prickly-pear cactus	Pleasant Valley PRNA Alum Beds PRNA Little Granite Creek PRNA Lightning Creek PRNA
	+	30	High elevation, Idaho fescue-junegrass community	Lightning Creek PRNA Pleasant Valley PRNA
	+	31.	Low elevation, Idaho fescue-junegrass community	Basin Creek PRNA
		31a.	Sand dropseed	Bill's Creek
			SHRUB-GRASSLAND COMMUNITIES	
	*	32.	Big sagebrush/bunchgrass community inside forest zone	Silver Creek RNA
	+	33.	Big sagebrush/bunchgrass community outside forest zone	Dry Mountain PRNA
	+	34.	Low sagebrush/bunchgrass community inside forest zone	Shaketable PRNA
FS,BLM, PVT	M	35.	Low sagebrush/bunchgrass community outside forest zone	None
	+	36.	Rigid sagebrush/bunchgrass scabland	Kelly Creek Butte PRNA Government Draw PRNA
	+	37.	Hackberry/bunchgrass canyon shrubland	Bills Creek PRNA
	+	38.	Mountain big sagebrush/Idaho fescue	Shaketable PRNA Vinegar Hill PRNA
	+	39.	Smooth sumac/bluebunch wheatgrass	Bob Creek PRNA
FS,BLM, PVT	H	40	Bitterbrush/bunchgrass	Shaketable PRNA
	+	41.	Mountain-mahogany/bunchgrass	Pleasant Valley PRNA Dry Mountain PRNA
	*	42.	Valley margin shrubland/grassland with big sagebrush, threetip sagebrush, and bunchgrasses	Powder River Canyon ACEC
BLM,PVT	H	43.	Valley bottomland with greasewood, alkali bluegrass, wildrye, and tufted hairgrass	None
		43a	Spiny green-bush/bluebunch wheatgrass	Alum Beds PRNA Pleasant Valley PRNA

TABLE H-2 (Cont'd.)
OCHOCO, BLUE, AND WALLOWA MOUNTAINS PROVINCE

TERRESTRIAL ECOSYSTEMS

Agency	Priority	Element	Name	Present Representation
			SUBALPINE AND ALPINE MEADOW COMMUNITIES	
	+	44.	High elevation Idaho fescue grasslands in the Blue and/or Strawberry Mountains	Baldy Mountain PRNA
	+	45.	Green fescue–Parry's rush community	None
	+	46.	Green fescue–Hood's sedge community	None
	+	47.	Green fescue–spurred lupine community	None
	+	48.	Alpine vegetation mosaic, including fellfields, heaths, and tundra	Mt Joseph PRNA
	+	49.	Alpine sedge communities	Dixie Butte PRNA
			SPECIAL TYPES	
	*	50.	Lodgepole pine/grouse huckleberry/pinegrass community in the Blue Mountains	Indian Creek RNA
	+	51.	Lodgepole pine/thinleaf huckleberry community	Elk Flats-Wenaha Breaks PRNA
	+	52.	Strawberry or Aldrich Mountains serpentine types	Baldy Mountain PRNA
PVT,FS	M	53.	Moist native bluegrass meadow (Nevada and Cusick's bluegrass) with silver sagebrush margin	None
	+	54.	Tufted hairgrass meadow and sedge complex	Cougar Meadow PRNA Elk Flats PRNA
	+	55.	Biscuit scabland in northern Blue Mountains	Vance Knoll PRNA
	+	56.	Aspen forest	Cougar Meadow PRNA Elk Flats PRNA
	*	57.	Low elevation riparian forest, with cottonwood, hawthorn, and alder	Keating Riparian RNA
	+	58.	High elevation riparian forest, with birch, alder, and dogwood	Pleasant Valley PRNA
FS	H	59.	Riparian forest in western Blue Mountains	None

TABLE H-2 (Cont'd.)
OCHOCO, BLUE, AND WALLOWA MOUNTAINS PROVINCE

AQUATIC ECOSYSTEMS

Agency	Priority	Element	Name	Present Representation
			RIVERINE	
	*	1.	First to third order stream system originating in western juniper zone, including intermittent streams	Keating Riparian RNA
	*	2.	First to third order stream system in Blue Mountains originating in ponderosa zone, including intermittent streams	Silver Creek RNA
FS,BLM	M	3.	First to third order stream system in Ochoco Mountains originating in ponderosa pine zone, including intermittent streams	None
	+	4.	First to third order stream system originating in Douglas-fir zone, if possible with waterfall/plunge pool area	Mill Creek Watershed PRNA (WA) Rainbow Creek RNA (WA)
	+	5.	First to third order stream system in Hells Canyon area flowing through a range of forest communities	Pleasant Valley PRNA Little Granite Creek PRNA
FS	H	6.	First to third order stream system originating in grand fir zone, if possible with waterfall/plunge pool area	None
	+	7.	First to third order stream system originating in subalpine fir zone	West Razz Lake PRNA
	*	8.	Fourth order stream segment in Blue Mountains with Cottonwood and hawthorn riparian vegetation	Joseph Canyon ACEC
	+	9.	Fourth order stream segment in Ochoco Mountains with riparian community	N. Fork Crooked River ACEC
			LACUSTRINE	
	+	10.	Mid to high elevation lake	West Razz Lake PRNA
	+	11.	Mid elevation permanent pond	Elk Flats-Wenaha Breaks PRNA
PVT,BLM	M	12.	Low elevation vernal pond with saltgrass and cordgrass	None
	*	13.	Mid to high elevation vernal pond	Indian Creek RNA
	+	14.	Subalpine permanent pond	Craig Mtn. Lake PRNA
	+	15.	Alpine permanent pond	West Razz Lake PRNA

TABLE H-2 (Cont'd)
OCHOCO, BLUE, AND WALLOWA MOUNTAINS PROVINCE

AQUATIC ECOSYSTEMS

Agency	Priority	Element	Name	Present Representation
			PALUSTRINE	
ST,FS	L	16.	Tule–cattail marsh	None
ST,FS	M	17	Sedge–rush fen complex	None
	+	18	Mid to high elevation sedge and grass wetlands	Birch Creek Cove PRNA
FS,PVT	M	19	Willow carr	None
	+	20.	Sphagnum bog	Duck Lake PRNA
			SPECIAL TYPES	
ST,PVT	M	21.	Hot springs	Alum Beds

PVT = Private land
ST = State land
BLM = Bureau of Land Management
FS = USDA Forest Service
ACE = Army Corps of Engineers
NPS = National Park Service
FWS = U S. Fish & Wildlife Service

H = High Priority
M = Medium Priority
L = Low Priority

RNA = Research Natural Area
TNC = Nature Conservancy Preserve
RSNA = Registered State Natural Area
ACEC = Area of Critical Environmental Concern
NHCA = Natural Heritage Conservation Area
PRNA = Proposed Research Natural Area

* = Adequately represented in the area named
\+ = Adequately represented on proposed but not established area
** = Partially protected due to designation type, size, or quality in this area

AREA NEEDS

Research Natural Area Needs in the Pacific Northwest (USDA Forest Service 1975) identifies the type and number of additional RNA's which originally were identified to provide a minimal coverage of the remaining unfilled elements Table H-3 summarizes these areas as originally identified for Region 6 and the Province.

TABLE H-3

ESTIMATED NUMBER OF RESEARCH NATURAL AREAS NEEDED BY STATE AND PHYSIOGRAPHIC PROVINCE

(Does not include marine and estuarine needs)

State and Province	Terrestrial and aquatic (freshwater) RNA's	Terrestrial RNA's	Aquatic (freshwater) RNA's	RNA's for rare and endangered species	Total
Ochoco, Blue, and Wallowa Mountains	5	9	4	0	18
Total, both States	46	125	64	13	248

The State Natural Heritage Plans (Oregon 1988, Washington 1987) should be recognized as the logical sources for updating this document for future RNA identification.

Research Natural Areas in Oregon and Washington. Past and Current Research and Related Literature (USDA Forest Service 1986b) lists all established RNA's in the Pacific Northwest Region by state and agency.

The original list of type and number of RNA's needed for the Province was later supplemented by Johnson (Johnson 1981) and still later by the State Natural Heritage Plans for Oregon and Washington (Table H-2). The RNA's recommended by the states as needed for the Province are identified in Table H-4. It should be noted that no adequate candidate area has yet emerged to represent 18 of the needed elements identified in Table H-2. When adequate candidates are found, additional RNA's will be recommended. These candidates will probably not have multiple elements because of the scarcity of the elements involved. Recent work by Johnson with the Pacific Northwest Research Natural Area Committee has led to the recommendation of a number of new RNA areas in this Province. Additional Research Natural Area proposals will probably be generated by the update of *Plant Communities of the Blue Mountains in Eastern Oregon and Southeastern Washington* in 1990.

Moore Flat and Lost Meadows are two areas which were considered for RNA status but were not recommended because there were better representatives for the elements involved These two areas are still available for reconsideration and recommendation if the candidates recommended to fill the element(s) are not accepted and established In the meantime they will remain undisturbed. Moore Flat is in the Wenaha-Tucannon Wilderness and Lost Meadows is in the Greenhorn unit of the North Fork John Day Wilderness.

TABLE H-4

OCHOCO, BLUE, AND WALLOWA MOUNTAIN PROVINCE RECOMMENDED RESEARCH NATURAL AREAS (AREA 3)

Forest		Area Name	District	Acres	Elements Filled[1] Terrestrial	Aquatic
Malheur		Baldy Mountain	Prairie City	2,850	4,23,44,52	
	•	Canyon Creek RNA	Bear Valley	700	8,13	
		Dixie Butte	Long Creek	300	49	
		Dugout Creek	Prairie City	270	18	
		Shaketable	Bear Valley	300	2,34,38,40	
Ochoco		Dry Mountain	Snow Mountain	1,200	3,7,33,41	
	*	Ochoco Divide RNA	Big Summit	2,050	7	
		Silver Creek	Snow Mountain	850	6,32	2
		Stinger Creek	Snow Mountain	450	7,8	
Umatilla		Birch Creek Cove	North Fork John Day	410		18
		Elk Flats Meadow	Walla Walla	75	54,56	
		Elk Fl. - Wenaha Breaks	Pomeroy	1,665	15,17,51	11
		Kelly Creek Butte	Heppner	80	36	
		Mill Creek Watershed	Walla Walla	7,950	9,11	4
	•	Pataha Bunchgrass RNA	Pomeroy	69	25a	
	*	Rainbow Creek RNA	Pomeroy	576	13,14,15	4
		Vinegar Hill	North Fork John Day	410	22,38	
Wallowa-Whitman		Basin Creek	Hells Canyon NRA	400	31	
		Bills Creek	Hells Canyon NRA	40	31a,37	
		Bob Creek	Hells Canyon NRA	100	39	
		Cougar Meadow	Baker	50	54,56	
		Craig Mountain Lake	Eagle Cap	100		14
		Duck Lake	Eagle Cap	500	15	20
		Government Draw	La Grande	200	12,28	
		Haystack Rock	Wallowa Valley	400	27	
		Horse Pasture Ridge	Wallowa Valley	250	27	
	*	Indian Creek RNA	La Grande	900	21,50	13
		Lake Fork	Pine	500	25	
		Mt. Joseph	Eagle Cap	700	48	
		Pleasant Valley	Hells Canyon NRA	1,400	11,24,29, 30,43a,41, 58	5
		Pt. Prominence	La Grande	700	19	
		Vance Knoll	Wallowa Valley	500	28,55	
		West Razz Lake	Eagle Cap	50	20	7,10,15
	**	Alum Beds	Hells Canyon (NRA)	630	29,43a	21
	**	Lightning Creek	Hells Canyon (NRA)	2,000	5a,29,30	
	**	Little Granite Creek	Hells Canyon (NRA)	7,125	5a,5b,20a,29	5

[1] Acres shown here may change during the development and approval process for each RNA establishment report.
• Established RNA's already in the system (signed by Chief, USDA Forest Service).
** Located on the Nez Perce National Forest (Region 1), but administered by the Wallowa-Whitman National Forest (Region 6).

POTENTIAL TO FULFILL AREA NEEDS

The following terrestrial elements have not been filled as of September 10, 1988. Prospective national forest opportunities for filling are listed in parentheses.

COMMUNITIES

Forested

western juniper/bluebunch wheatgrass (MAL, OCH NF's)
ponderosa pine/bunchgrass in Blue Mountains (MAL NF)
Douglas-fir and/or ponderosa pine/mountain snowberry (W-W, MAL NF's)
grand fir/grouse huckleberry (UMA, MAL NF's)
grand fir/pinegrass (ash) (MAL, OCH NF's)

Steppe

bluebunch wheatgrass–Idaho fescue/silky lupine (W-W NF)
green fescue–Parry's rush (W-W NF)
green fescue–Hood's sedge (W-W NF)
green fescue–spurred lupine (W-W NF)

Riparian

1st to 3rd order stream system in grand fir zone (all)
tule–cattail marsh (all)
sedge–rush fen complex (all)
willow carr (all)

CURRENT MANAGEMENT

This discussion of Umatilla National Forest output targets involves five of the eight areas previously identified.

Of the eight areas being considered for the RNA system on the Forest, all of four and part of one other can be removed from the discussion of output targets because current management includes the following direction affecting timber harvest or grazing disturbance:

1. Both Pataha Bunchgrass and Rainbow Creek are existing RNA's. No timber harvest or grazing is permitted.

2. Elk Flats-Wenaha Breaks is within the Wenaha-Tucannon Wilderness. No commercial timber harvest and no increase in livestock use are permitted.

3. Mill Creek Watershed is a municipal watershed. No cattle or sheep grazing is permitted. In addition, this plan is recommending that the area be withdrawn from timber harvest under management strategies D2 and F2.

4. The north half of Vinegar Hill is within the North Fork John Day Wilderness, Greenhorn unit. No timber harvest or grazing is permitted. The south half of the area is being recommended for scenic area management under management strategy A8. Here timber harvest is nonscheduled and only light grazing is permitted.

IMPLICATIONS FOR RESEARCH

The 83 elements needed to complete a minimal natural area system for the Province are identified in Table H-2. The descriptions of these elements provide insight into their inherent distinctions, which provide the bases for research inquiries. Research completed in the existing Pataha Bunchgrass and Rainbow Creek RNA's has been reported by Greene (USDA Forest Service 1986b). Opportunities for research on the candidate RNA's have not been identified at this time.

PROTECTION AND MANAGEMENT STANDARDS (FSM 4063.3)

RNA's must be protected against activities which directly or indirectly modify ecological processes Logging activities are not permitted, and grazing by livestock is restricted to those areas where it is essential for the maintenance of a specific vegetative type. Prohibit all forms of recreational use if such use threatens research or educational values.

Physical improvements such as roads, fences, or signs should not be permitted within an RNA unless they contribute to the objectives or to the protection of the area. RNA's requiring protection against livestock or excessive human use will have their boundaries fenced, unless fences already exist which prohibit livestock from reaching the RNA Buildings are not permitted.

Resource Protection (FSM 4063.32)

Natural processes will be maintained within each RNA.

1. Fires endangering RNA's will be extinguished as quickly as possible using means that will cause minimal damage to the area. Natural fires will be allowed to burn only within a prescription designed to accomplish objectives of the specific natural area.

2 Debris resulting from fires should not be cleaned up nor should any fire hazard reduction or reforestation be undertaken.

3 No action should be taken against endemic insects, diseases, or wild plants or animals

4 If the cultural resources involved are eligible for the National Register, a Memorandum of Understanding or an interagency agreement with the Advisory Committee on Historic Preservation should be prepared.

5. Protection measures for RNA's established within congressionally-designated areas must be in accord with the management plan for that area.

Scientific and Educational Use (FSM 4063.33)

Collection of endangered, threatened, or rare plants will be carefully controlled by permits issued by the U.S. Fish and Wildlife Service. (FSM 4063.33)

Vegetation Management (FSM 4063.34)

Management practices may be authorized, by the station director, with the concurrence of the Forest Supervisor, to preserve the vegetation for which the RNA was created. These practices may include grazing, control of excessive animal populations, or prescribed burning.

Mineral Entry (FSM 4063.35)

The Regional Forester may ask the Bureau of Land Management to withdraw a Research Natural Area from mineral entry after its establishment.

Monumenting Boundaries (FSM 4063.37)

All RNA's, except those in the Wenaha-Tucannon or North Fork John Day wildernesses or the Mill Creek Watershed, will have their boundaries marked in the field by monumenting all corners or turning points Limited posting will be required on those areas which have roads or trails passing along the boundary or through the area, or to insure the integrity of the area

Establishment (FSM 4063.4)

RNA's will be documented by an approved establishment report. These reports should record any monumentation and management practices

POTENTIAL ESTABLISHMENT PROBLEMS

The following are potential problems which would need to be recognized in the establishment of the RNA's.

1. Elk Flats Meadow — This entire area lies within a potential utility corridor. The area presently receives dispersed recreation use by OHV users, campers, and pack and saddle stock. A road barrier or a short drift fence may be required.

2. Mill Creek Watershed — This area contains the Mill Creek cabin administrative site, private land owned by the City of Walla Walla, and big game winter range.

3. Vinegar Hill — This area is highly mineralized and there will undoubtedly be strong resistance to its withdrawal from mineral entry.

4. Area size (FSM 4063.1) — RNA's should be at least 300 acres in order to provide essentially unmodified conditions in their interior portions. Elk Flats Meadow and Kelly Creek Butte are both less than 100 acres in size, and Lost Meadow is less than 300 acres.

5. The potential cost of a mineral withdrawal survey. See the end of this appendix for the legal descriptions to be used to withdraw the Forest RNA's.

MAPS

Figure H-A displays the vicinity location on the Forest of the RNA's considered in this document. Maps 1 through 8 show topographical and geographical locations of the individual RNA's under consideration.

Umatilla National Forest

APPROXIMATE LOCATION OF RESEARCH NATURAL AREAS

1 PATAHA BUNCHGRASS
2 RAINBOW CREEK
3 ELK FLATS MEADOW *Candidate*
4 ELK FLATS - WENAHA BREAKS *Candidate*
5 KELLY CREEK BUTTE *Candidate*
6 MILL CREEK WATERSHED *Candidate*
7 VINEGAR HILL *Candidate*
8 BIRCH CREEK COVE *Candidate*

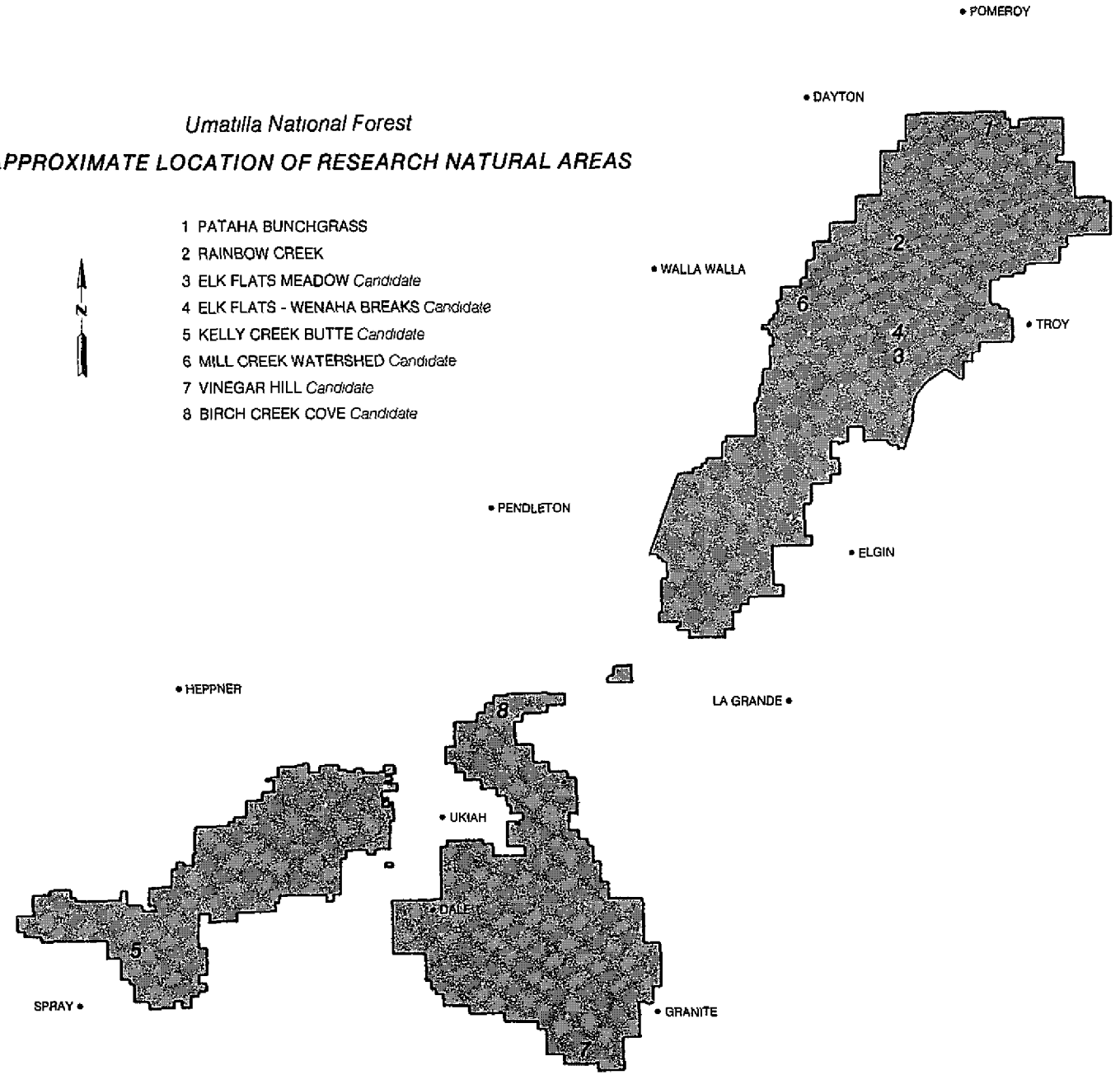
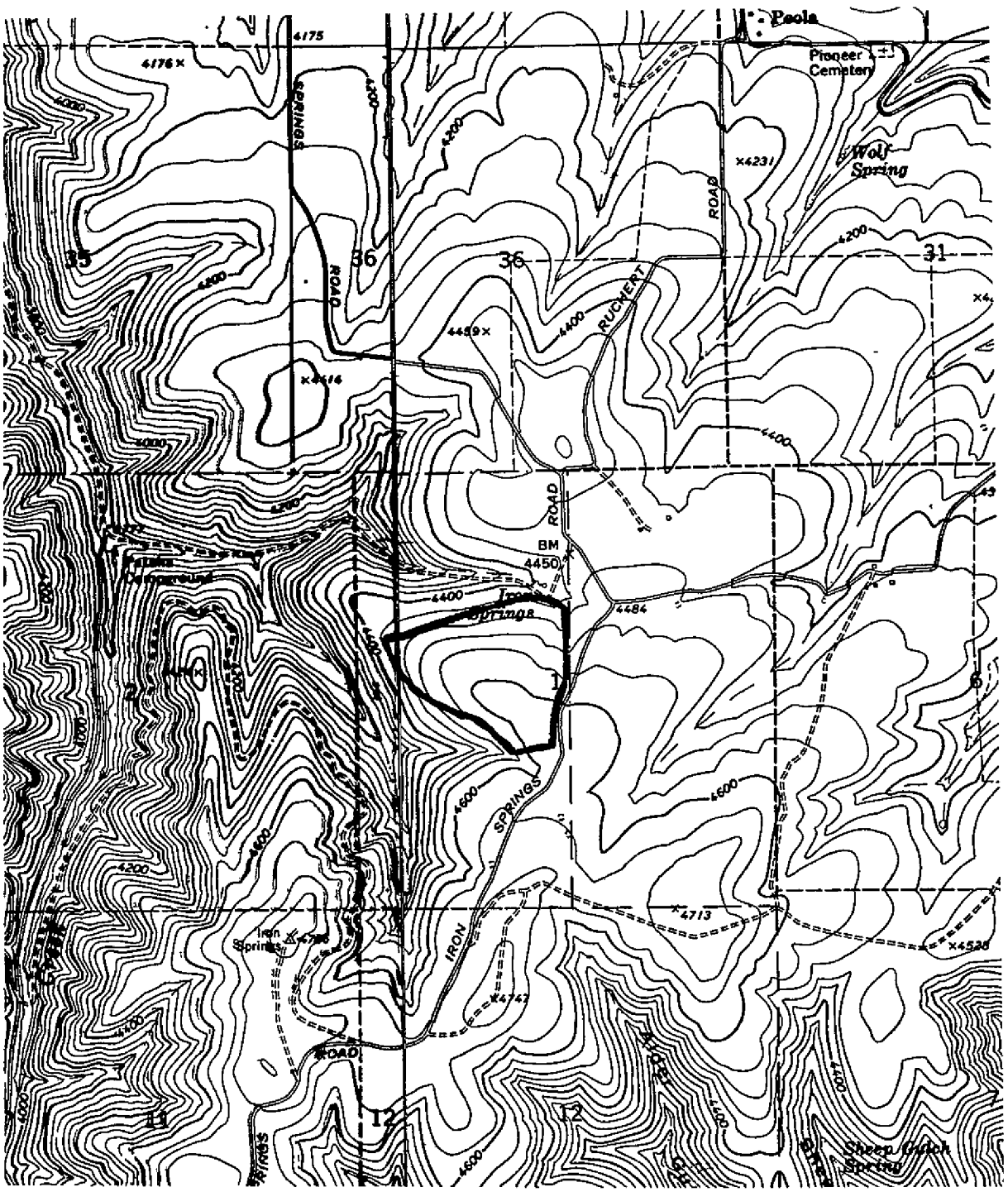


FIGURE H-A

MAP 1

PATAHA BUNCHGRASS RNA

Umatilla National Forest

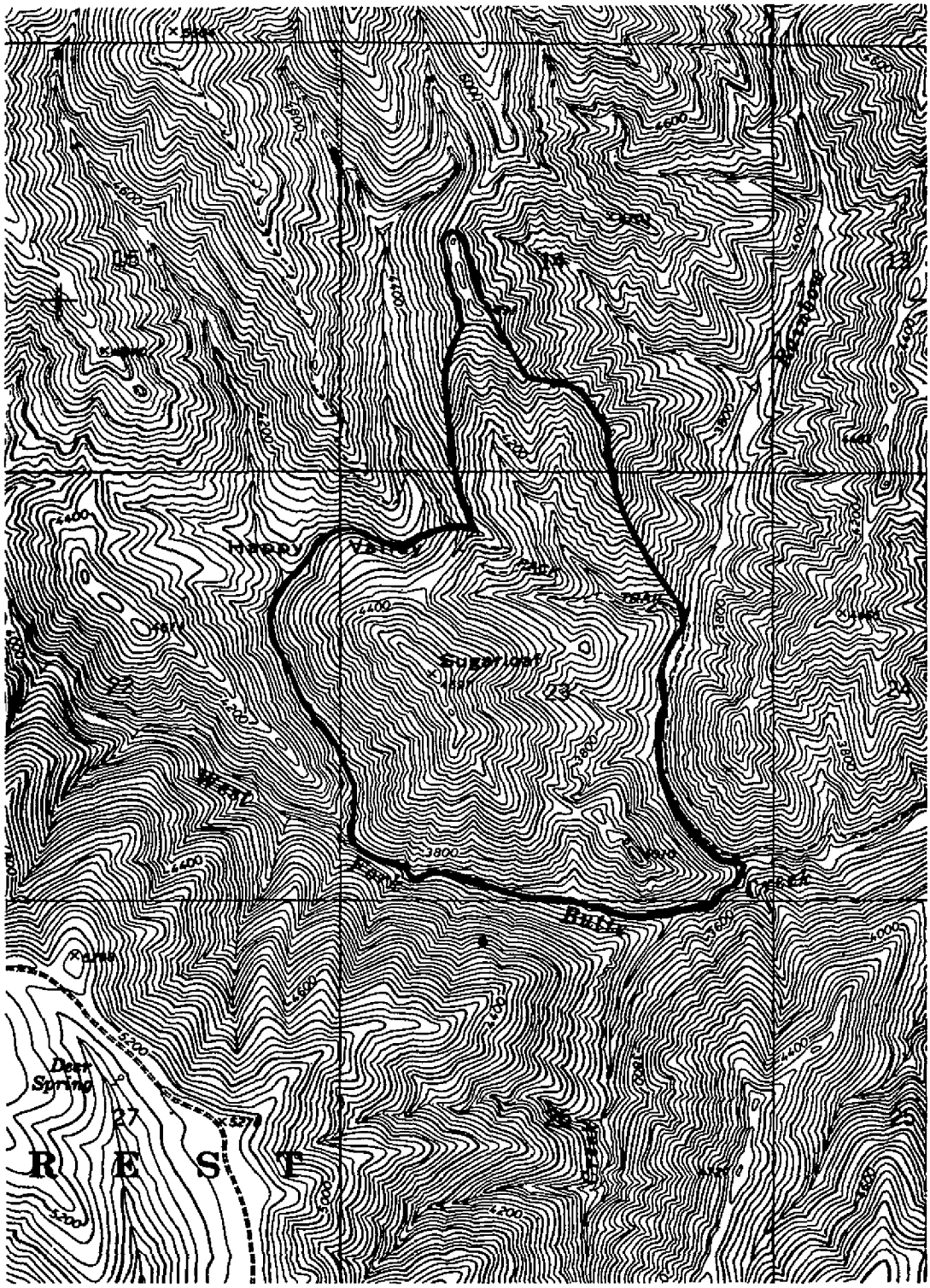


H - 15

MAP 2

RAINBOW CREEK RNA

Umatilla National Forest

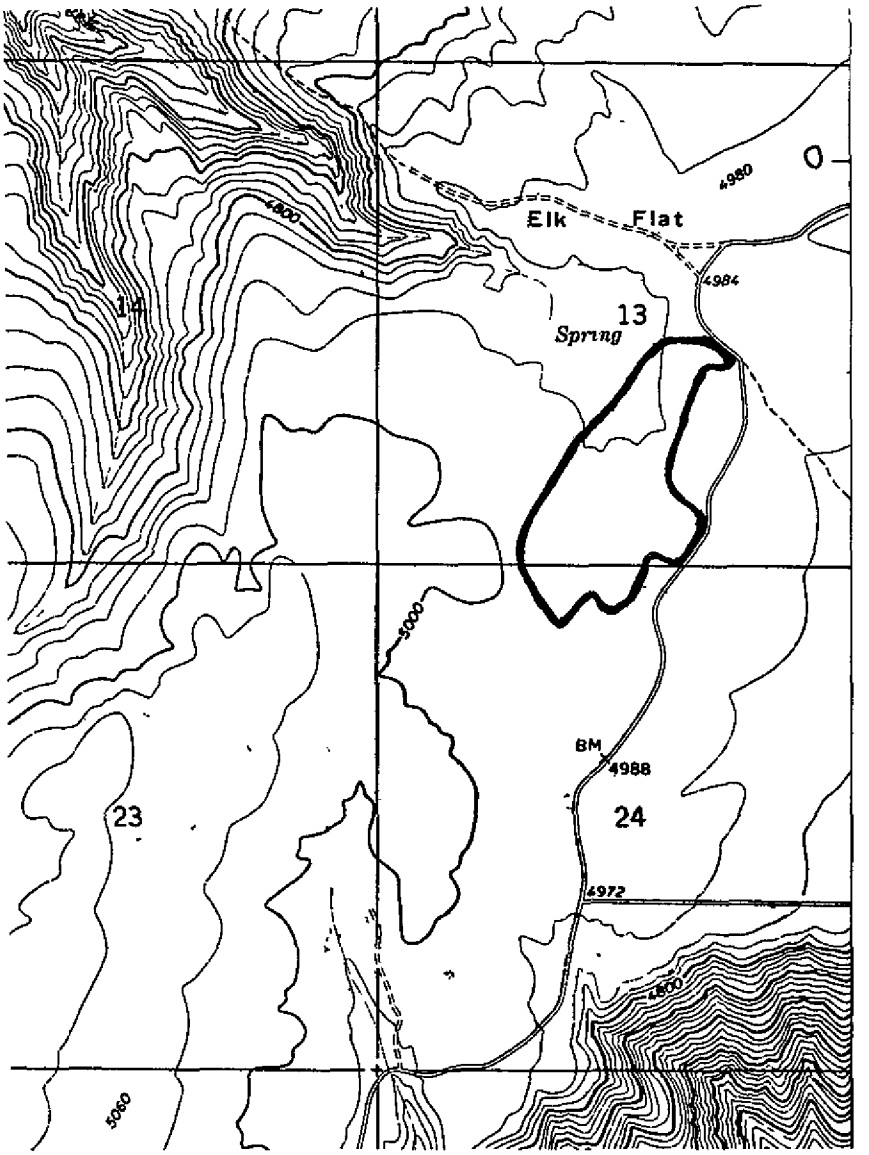


MAP 3

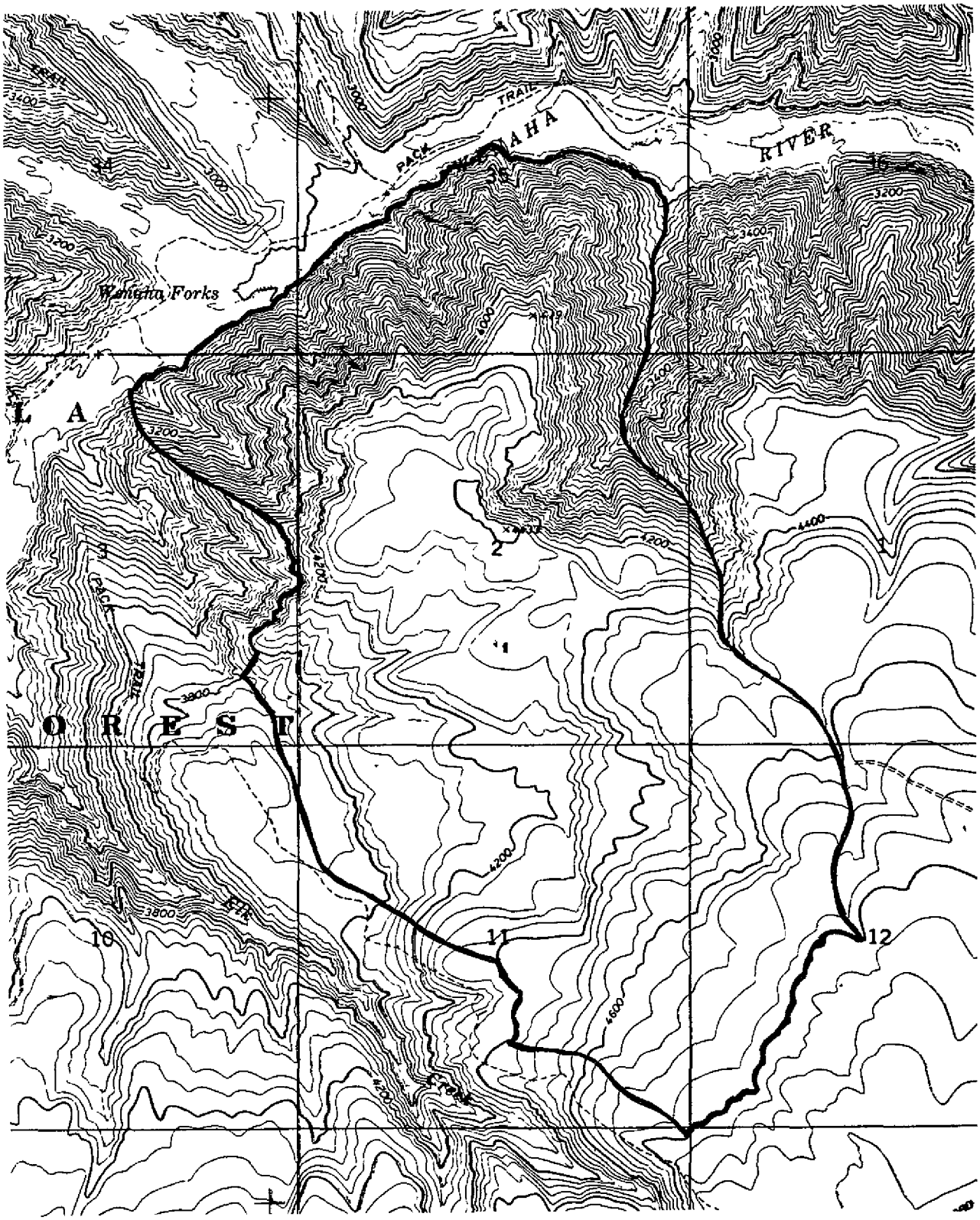
ELK FLATS MEADOW

RNA CANDIDATE

Umatilla National Forest



MAP 4
ELK FLATS – WENAHA BREAKS
RNA CANDIDATE
Umatilla National Forest

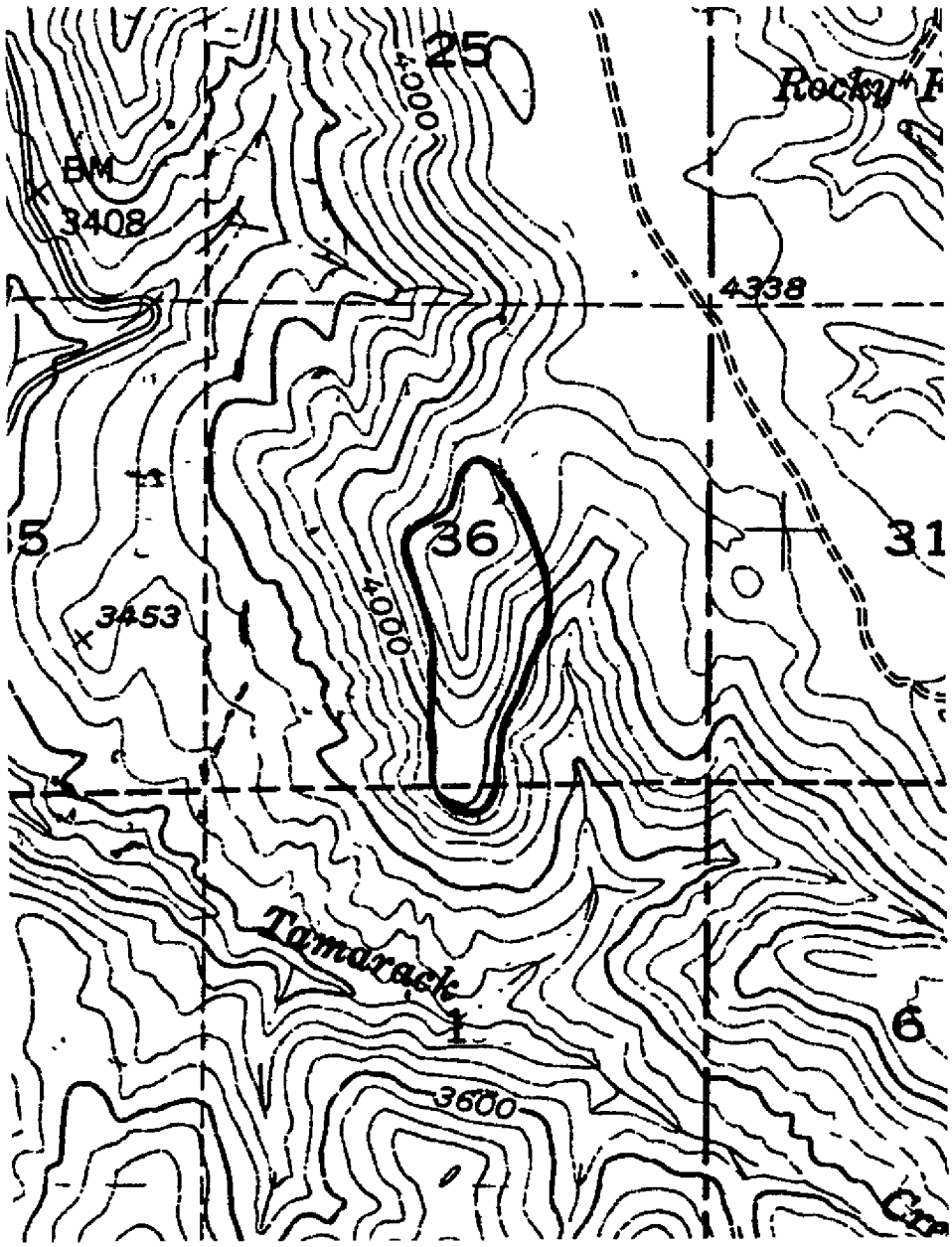


MAP 5

KELLY CREEK BUTTE

RNA CANDIDATE

Umatilla National Forest



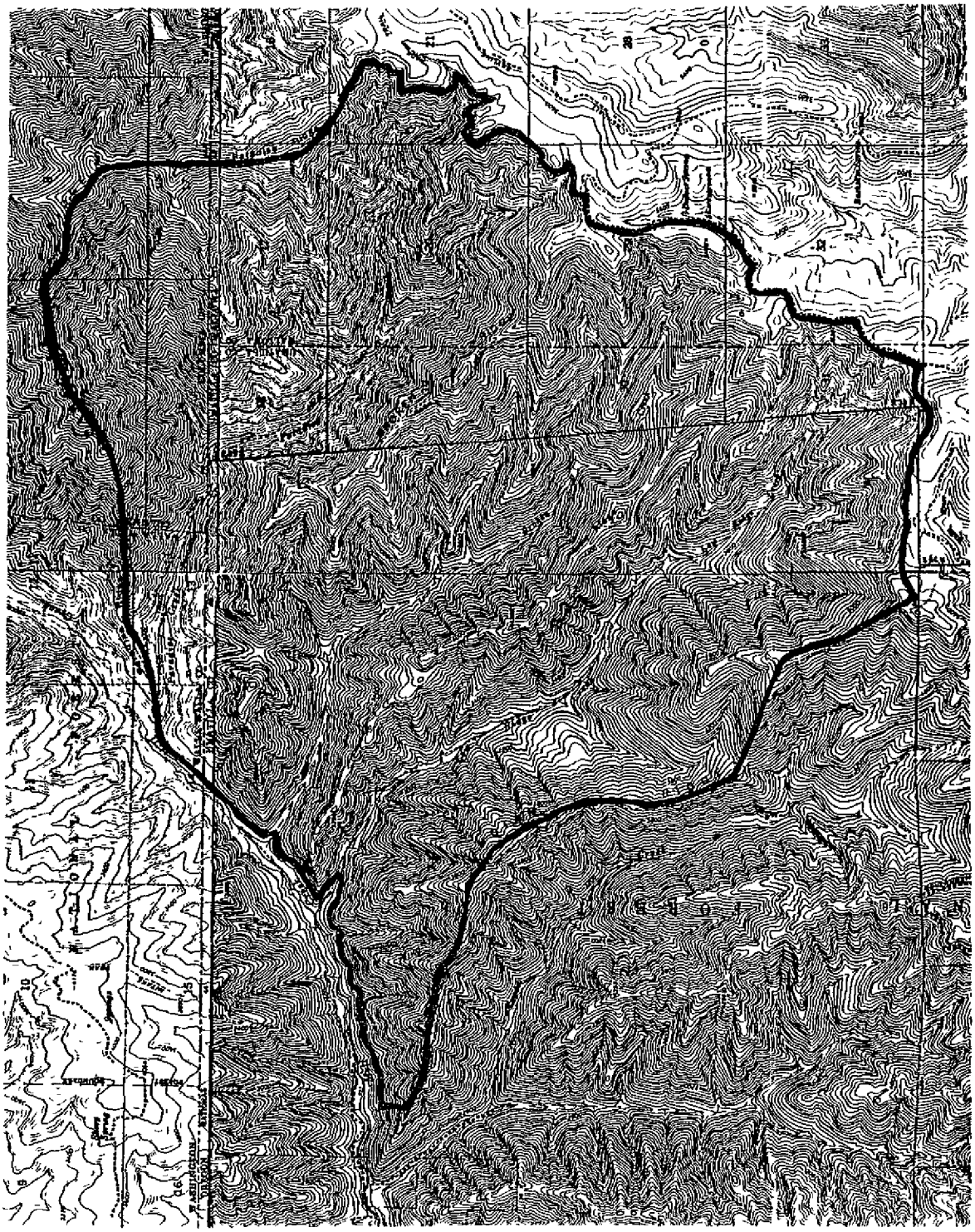
H - 19

MAP 6

MILL CREEK WATERSHED

RNA CANDIDATE

Umatilla National Forest



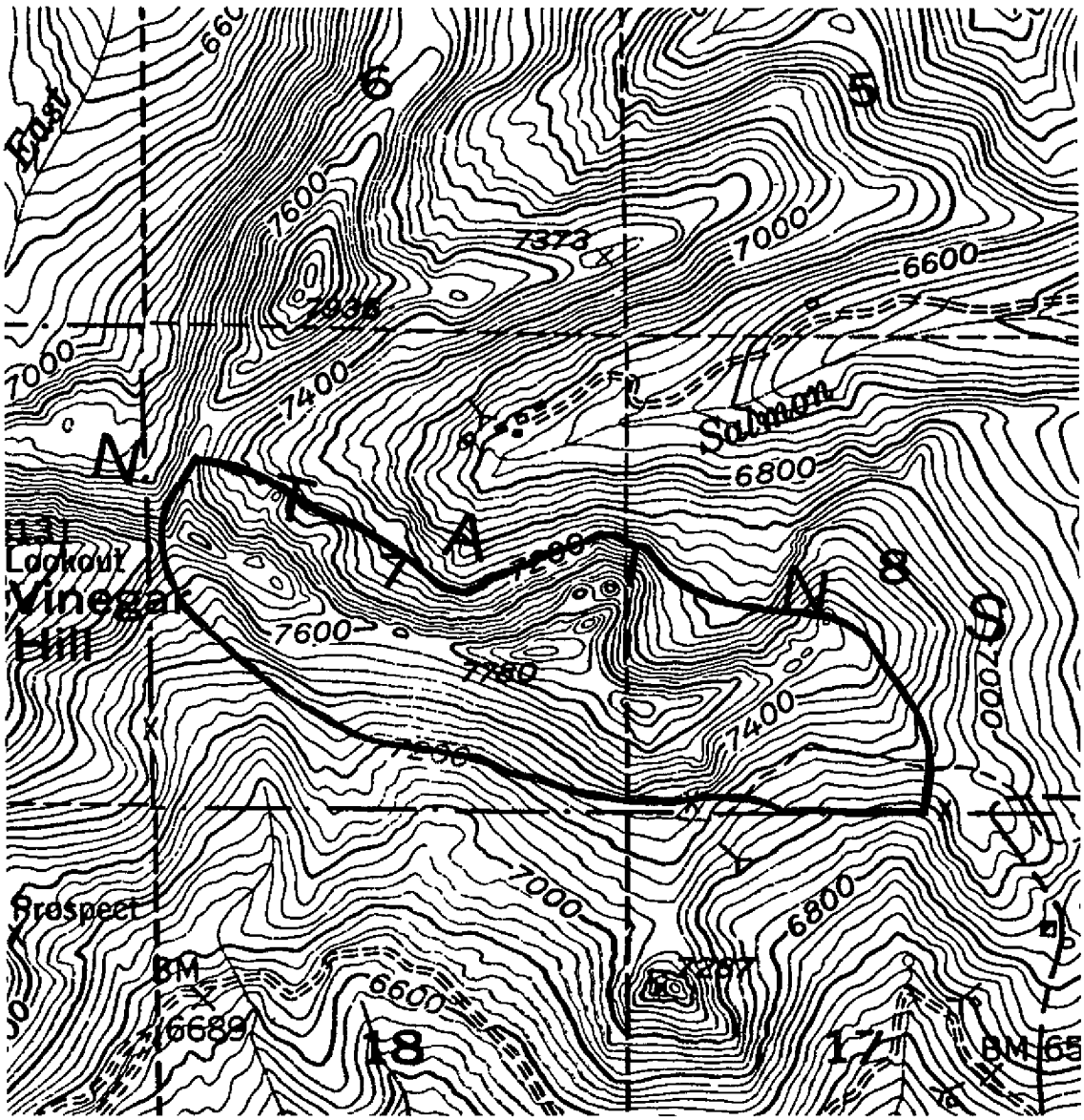
H - 20

MAP 7

VINEGAR HILL

RNA CANDIDATE

Umatilla National Forest



T 10 S

R 34 E

R 35 E

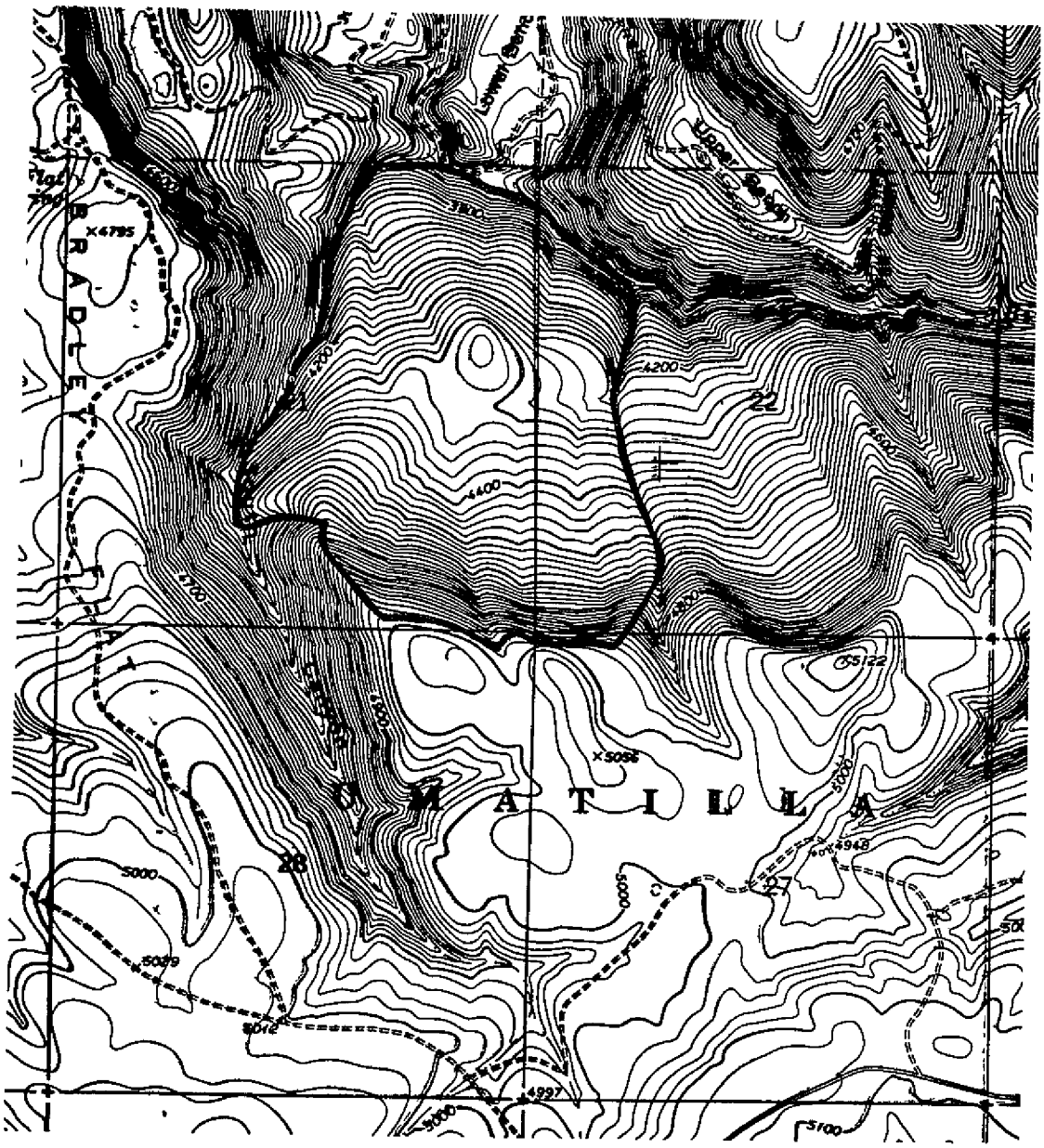
H - 21

MAP 8

BIRCH CREEK COVE

RNA CANDIDATE

Umatilla National Forest



T 3 S

R 32 E

H - 22

LEGAL DESCRIPTIONS

The following are legal descriptions to be used to withdraw the Forest RNA's from mineral entry. Descriptions are included for the two existing RNA's (Pataha Bunchgrass and Rainbow Creek) because the legal descriptions presented in Federal Register Document 72-17904 and corrected by Federal Register, Volume 37, No 249 - Wednesday, December 27, 1982, are incomplete.

MAP 1 - PATAHA BUNCHGRASS RESEARCH NATURAL AREA REVISED DESCRIPTION

T.9N., R 42E.,

Sec. 1, S1/2NW1/4, N1/2NE1/4SW1/4, N1/2S1/2NE1/4SW1/4, and N1/2NE1/4NW1/4SW1/4.

The area described aggregates 115 00 acres in Garfield County

MAP 2 - RAINBOW CREEK RESEARCH NATURAL AREA REVISED DESCRIPTION

T.7N., R.40E.,

Sec. 14, E1/2SE1/4SW1/4NW1/4, W1/2SW1/4SE1/4NW1/4, W1/2NW1/4NE1/4SW1/4, SE1/4NW1/4NE1/4SW1/4, SW1/4NE1/4SW1/4, NW1/4SE1/4NE1/4SW1/4, S1/2SE1/4NE1/4SW1/4, E1/2E1/2W1/2SW1/4, SE1/4SW1/4, SW1/4NE1/4SW1/4SE1/4, W1/2SW1/4SE1/4, and W1/2SE1/4SW1/4SE1/4;

Sec. 22, SE1/4NE1/4NE1/4, E1/2SE1/4NE1/4, E1/2W1/2SE1/4NE1/4, NE1/4NE1/4SE1/4, and NE1/4SE1/4NE1/4SE1/4;

Sec. 23, SW1/4SW1/4NE1/4NE1/4, NE1/4NW1/4, S1/2NW1/4, S1/2NW1/4NW1/4, E1/2NE1/4NW1/4NW1/4, SW1/4, W1/2E1/2, W1/2SE1/4NE1/4, W1/2W1/2NE1/4SE1/4, W1/2SE1/4SE1/4, SE1/4SE1/4SE1/4, and S1/2NE1/4SE1/4SE1/4;

Sec. 26, N1/2N1/2N1/2NE1/4.

The area described aggregates 727 50 acres in Columbia County.

MAP 3 - ELK FLATS MEADOW RESEARCH NATURAL AREA

T.5N., R 40E.,

Sec. 13, E1/2SE1/4SW1/4, E1/2NW1/4SE1/4SW1/4, SW1/4SE1/4SW1/4, S1/2SE1/4NE1/4SW1/4, NE1/4SE1/4NE1/4SW1/4, W1/2NW1/4SE1/4, W1/2NE1/4NW1/4SE1/4, SE1/4NE1/4NW1/4SE1/4, NW1/4SE1/4NW1/4SE1/4, W1/2SW1/4SE1/4, and W1/4SE1/4SW1/4SE1/4;

Sec. 24, N1/2NE1/4NW1/4, and W1/2NW1/4NW1/4 NE1/4.

The area described aggregates 122.5 acres in Wallowa County.

MAP 4 - ELK FLATS-WENAHA BREAKS RESEARCH NATURAL AREA

T 5N., R.40E.,

Sec. 1, W1/2SW1/4SW1/4NW1/4, W1/2NW1/4SW1/4, SW1/4SW1/4, SW1/4SE1/4SW1/4, S1/2NW1/4SE1/4SW1/4, and W1/2SE1/4SE1/4SW1/4;

Sec. 2, W1/2 Lot 1, W1/2NE1/4 Lot 1, Lot 2, Lot 3, Lot 4, SW1/4NE1/4, W1/2SE1/4NE1/4, SE1/4SE1/4NE1/4, S1/2NE1/4SE1/4NE1/4, NW1/4NE1/4SE1/4NE1/4, S1/2NW1/4, and S1/2;

Sec. 3, Lot 1, NE1/4 Lot 2, N1/2SE1/4 Lot 2, SE1/4SE1/4 Lot 2, E1/2NE1/4SW1/4NE1/4, NE1/4SW1/4SE1/4NE1/4, N1/2SE1/4NE1/4, N1/2SE1/4SE1/4NE1/4, SE1/4SE1/4SE1/4NE1/4, E1/2E1/2NE1/4SE1/4, W1/2SE1/4NE1/4SE1/4, and E1/2SE1/4SE1/4;

Sec. 10, E1/2E1/2NE1/4NE1/4, and W1/2NE1/4NE1/4NE1/4;

Sec. 11, NE1/4, N1/2NW1/4, N1/2SW1/4NW1/4, N1/2SE1/4SW1/4NW1/4, SE1/4SE1/4SW1/4NW1/4, SE1/4NW1/4, NE1/4NE1/4SW1/4, NE1/4NW1/4NE1/4SW1/4, N1/2SE1/4, NE1/4SW1/4SE1/4, N1/2NW1/4SW1/4SE1/4, N1/2SE1/4SE1/4, N1/2SW1/4SE1/4SE1/4, and SE1/4SE1/4SE1/4;

Sec. 12, S1/2NE1/4NW1/4, NW1/4NE1/4NW1/4, W1/2NE1/4NE1/4NW1/4, W1/2NW1/4, N1/2SE1/4NW1/4, SW1/4SE1/4NW1/4, W1/2SE1/4SE1/4NW1/4, NE1/4SE1/4SE1/4NW1/4, NW1/4SW1/4, NW1/4NE1/4SW1/4, W1/2SW1/4NE11/4SW1/4, N1/2SW1/4SW1/4, N1/2SE1/4SW1/4SW1/4, and SW1/4SW1/4SW1/4;

T.6N., R.40E.,

Sec. 34, SE1/4SE1/4SW1/4SE1/4, S1/2SE1/4SE1/4, and S1/2NE1/4SE1/4SE1/4;

Sec. 35, S1/2S1/2SW1/4NE1/4, SW1/4SW1/4SE1/4NE1/4, S1/2SE1/4SE1/4NW1/4, S1/2NE1/4SW1/4, NE1/4NE1/4SW1/4, E1/2NW1/4NE1/4SW1/4, SW1/4NW1/4NE1/4SW1/4, SE1/4NW1/4SW1/4, E1/2SW1/4NW1/4SW1/4, SW1/4SW1/4NW1/4SW1/4, SE1/4NE1/4NW1/4SW1/4, S1/2SW1/4, W1/2NE1/4SE1/4, SE1/4NE1/4SE1/4, S1/2NE1/4NE1/4SE1/4, NW1/4NE1/4NE1/4SE1/4, W1/2SE1/4, W1/2SE1/4SE1/4, and W1/2E1/2SE1/4SE1/4.

The area described aggregates 1,887.17 acres in Wallowa County.

MAP 5 - KELLY CREEK BUTTE RESEARCH NATURAL AREA

T.7S., R 25E.,

Sec. 36, W1/2SW1/4NE1/4, W1/2SE1/4SW1/4NE1/4, SE1/4SE1/4NW1/4, SE1/4NE1/4SE1/4NW1/4, SE1/4SW1/4SE1/4NW1/4, E1/2NE1/4SW1/4, NE1/4NW1/4NE1/4SW1/4, E1/2SE1/4SW1/4, W1/2NW1/4SE1/4, W1/2E1/2NW1/4SE1/4, SE1/4NE1/4NW1/4SE1/4, NE1/4SE1/4NW1/4SE1/4, W1/2SW1/4SE1/4, and W1/2NE1/4SW1/4SE1/4;

T.8S., R 25E.,

Sec. 1, W1/2NW1/4 Lot 2, NE1/4NW1/4 Lot 2, and E1/2NE1/4 Lot 3.

The area described aggregates 155 18 acres in Wheeler County.

MAP 6 - MILL CREEK WATERSHED RESEARCH NATURAL AREA

Located wholly within the restricted use area "Mill Creek Watershed" as described in the public notice dated September 30, 1976. Being in T.6.N., R.38E , and T.5N. and T.6N., R.39E , W.M., Oregon and Washington, and bounded by the following described line: Beginning at the point where the east line of the W1/2,W1/2 of section 22, T 6N., R 38E., W.M., Oregon, intersects the crest of Indian Ridge;

Thence, northerly along the east line of the W1/2,W1/2 of said section 22 to the 2,600 foot contour elevation located south of Mill Creek, a distance of approximately 700 feet;

Thence, northeasterly following the 2,600 foot elevation contour, across the state line into Washington to the point where this elevation contour crosses Mill Creek, a distance of approximately 2.5 miles;

Thence, northeasterly along the thread of Mill Creek to the confluence of Mill Creek and Paradise Creek, a distance of approximately 150 feet;

Thence, northeasterly, easterly, and southeasterly along the crest of Paradise Ridge, across the state line into Oregon, and into T.6N., R.39E , W.M., to a saddle on the crest of Paradise Ridge located approximately 1,200 feet east and 300 feet south of the section corner common to sections 16, 17, 20, and 21, T.6N., R.39E., a recovered corner, a distance of approximately 4.5 miles;

Thence, southeasterly along the crest of Paradise Ridge to the 5,480 foot contour elevation, a distance of approximately 200 feet;

Thence, southeasterly, southerly, and southwesterly along the 5,480 foot contour elevation to the intersection with the west line of the E1/2,E1/2 of section 29, T.6N., R.39E., W.M., Oregon, a distance of approximately 1.5 miles;

Thence, southerly along the west line of the E1/2,E1/2 of said section 29 to the north edge of Forest Road No. 65, a distance of approximately 300 feet;

Thence, westerly and southerly along the northerly and westerly edge of Forest Road No. 65 to the point where Forest Road No. 65 intersects the crest of Indian Ridge, located approximately 1,000 feet east and 150 feet north of the closing township corner of T.5N., R.38 and 39E., on the south line of section 36, T.6N., R.38E., a distance of approximately 3.0 miles; and

Thence, westerly and northwesterly along the crest of Indian Ridge, a distance of approximately 4 5 miles to the point of beginning.

The area aggregates 252 acres in Walla Walla County and 734 acres in Columbia County, Washington, and 5,269 acres in Umatilla County and 1,686 acres in Wallowa County, Oregon, for a total of 7,941 aggregate acres

MAP 7 - VINEGAR HILL RESEARCH NATURAL AREA

T.10S., R.35E.,

Sec. 7, Lot 2, N1/2 Lot 3, SE1/4 Lot 3, NE1/4SW1/4 Lot 3, NE1/4NE1/4 Lot 4, S1/2S1/2SW1/4NE1/4, NW1/4SW1/4SW1/4NE1/4, SE1/4SE1/4NE1/4, S1/2SW1/4SE1/4NE1/4, NE1/4SW1/4SE1/4NE1/4, S1/2SE1/4NW1/4, S1/2NW1/4SE1/4NW1/4, NW1/4NW1/4SE1/4NW1/4, SW1/4NE1/4SE1/4NW1/4, NE1/4SW1/4, NE1/4SE1/4SW1/4, N1/2NW1/4SE1/4SW1/4, SE1/4NW1/4SE1/4SW1/4, N1/2SE1/4, N1/2SW1/4SE1/4, N1/2S1/2SW1/4SE1/4, and SE1/4SE1/4;

Sec. 8, S1/2SW1/4SW1/4NW1/4, NW1/4SW1/4SW1/4NW1/4, S1/2NE1/4SW1/4, NW1/4NE1/4SW1/4, S1/2NE1/4NE1/4NE1/4SW1/4, NW1/4SW1/4, S1/2SW1/4, S1/2SW1/4NW1/4SE1/4, NW1/4SW1/4NW1/4SE1/4, W1/2SW1/4SE1/4, and W1/2E1/2SW1/4SE1/4

The area described aggregates 544.56 acres in Grant County.

MAP 8 - BIRCH CREEK COVE RESEARCH NATURAL AREA

Mineral withdrawal legal description T.3S., R 32E., W.M.;
Sec. 21, E1/2, SE1/4NW1/4, and E1/2SW1/4;
Sec. 22, W1/2NW1/4, W1/2SW1/4, and SE1/4SW1/4;
Sec. 27, NW1/4NW1/4; and
Sec. 28, NE1/4NE1/4.

The area described aggregates 720 acres in Umatilla County.

REFERENCES

Hall, Federick C. Plant communities of the Blue Mountains in eastern Oregon and southeastern Washington R6 Area Guide 3-1. Portland, OR: U S. Department of Agriculture, Forest Service, Pacific Northwest Region; 1973. 62 p.

Johnson, Charles G., Jr. Final report research natural area program Inventory phase, Area 3. [Place of publication unknown]: [Publisher name unknown], 1981 83 p.

Johnson, Charles G., Jr.; Simon, Steven A. Plan associations of the Wallowa-Snake Province: *Wallowa-Whitman National Forest. Portland, OR: U.S. Department of Agriculture, Forest Service,* Pacific Northwest Region, 1987 400 p.

U.S Department of Agriculture, Forest Service. Federal Register 36 CFR Part 219.25, Research natural areas; 1982 September 30.

U.S. Department of Agriculture, Forest Service. Forest Service manual: Research natural areas, Section 4063 03, Amendment 31; 1979 March.

U.S. Department of Agriculture, Forest Service. 1920 Internal correspondence to Forest Supervisors, signed by Regional Forester Worthington, Subject. Research natural area considerations in forest planning; 1981b November 24. 1 p.

U.S. Department of Agriculture, Forest Service. 1920/4060 Internal correspondence to Forest Supervisors, signed by Regional Forester Worthington, Subject. Considering research natural area needs in forest plans, 1981a June 4.

U.S. Department of Agriculture, Forest Service. 4060 Internal correspondence to Blue Mountain Forest Supervisors, signed by Chief Plant Ecologist Jerry Franklin, Subject: Charlie Johnson's additional cell needs; 1981c October 21

U S Department of Agriculture, Forest Service. Research natural area needs in the Pacific Northwest: a contribution to land-use planning Gen Tech Rep. PNW-38 Portland, OR Pacific Northwest Region, Forest and Range Experiment Station; 1975. 231 p.

U.S. Department of Agriculture, Forest Service. Research natural areas in Washington and Oregon. Past and current research and related literature. Pacific Northwest Research Station. Gen. Tech Rpt. PNW-197; 1986b November. 110-115

Washington Department of Natural Resources State of Washington Natural Heritage Plan Final. [Place of publication unknown]. 1987.

APPENDIX I

APPENDIX I

MINERALS, LOCATABLE AND LEASABLE

TABLE OF CONTENTS

	Page
Introduction	I-1
Locatable Minerals	I-1
Minerals and Metals Found on the Umatilla National Forest (Table I-1)	I-2
Evaluation Criteria for Locatable Minerals (Table I-2)	I-3
Mineralized Areas of the Umatilla National Forest (Figure I-1, Map)	I-4
Mineralized Areas	I-5
Ben Harrison Peak – Category II	I-5
Boulder Butte – Category IV	I-5
Crane Creek – Category IV	I-5
Glade Creek – Category IV	I-6
Granite – Category II	I-6
Granite-Rabbit – Category IV	I-7
Greenhorn – Category III	I-8
Kenney-Welch – Category IV	I-8
North Fork – Category IV	I-9
Silver Creek – Category IV	I-9
Vinegar – Category IV	I-10
Leasable Minerals	I-10
Oil and Gas	I-10
Coal	I-11
Geothermal	I-11
Mineral Materials	I-11
Lands Considered Valuable for Oil and Gas, Geothermal Resources (Figure I-2, Map)	I-12
References	I-13

APPENDIX I

MINERALS, LOCATABLE AND LEASABLE

INTRODUCTION

Historically, beginning in 1862, one of the main uses of the Umatilla National Forest was for prospecting and mining of minerals. In fact, the North Fork John Day area is arguably the richest producer of gold and silver in the state of Oregon. The Forest also possesses other minerals of importance and some energy resources as well. The production of valuable minerals continues today, although at a lower rate than in the past, and will continue to be important for the foreseeable future.

This appendix provides a detailed account of the locations, designations, and geologic compositions of the main mineralized areas on the Forest; a brief listing of the historical levels of mineral production; and an evaluation of the future potential for the development of various mineral and energy resources (leasable minerals).

LOCATABLE MINERALS

Mineralized areas of the Umatilla National Forest are shown in Figure I-1. Table I-2 displays evaluation criteria used to delineate and categorize mineralized areas in the Forest vicinity. Note that Category V includes "all other" areas, both unknown and unfavorable for mineral deposits. It would be difficult to differentiate these areas on a map, since new discoveries sometimes result in mines being located in areas previously considered unfavorable.

To date, the most productive metallic mineral deposits on the Forest have been found in pre-Tertiary rocks on the margins of Mesozoic granitic intrusives. Areas of Tertiary silicic volcanics and shallow intrusives, found over much of the southeastern portion of the Forest, are considered by many mineral explorationists to be favorable hosts for mineral deposits.

Most of the mining activity in the area was stopped in 1942 when War Production Board Order L-208 closed all precious metals mines. Increased operating costs, a fixed gold price, and the substantial expenditures necessary to reactivate mines neglected for several years prevented the reopening of all but a few precious metals mines after the war. Only recently, with the increase in gold and silver prices, has the area re-emerged as a focus of mining interest. There are currently thousands of lode and placer claims in the mineral belt of northeast Oregon.

Past production estimates from mines within and adjacent to the Umatilla:

Mine	Location	Production	References
Ben Harrison	S.25, T.9S., R.34E.	$425,000	Brooks and others 1983
Morris	S.1, T.10S., R.34E.	48,400	Brooks and others 1983
Silver Bell	S.2, T.10S., R.34E.	4,000	Brooks and others 1983
Tempest	S.10, T.10S., R.34E.	10,000	Brooks and others 1983; Lindgren 1901
Total		$487,400	

Estimated metal output: 13,500 oz. of gold; 291,200 oz. of silver.

TABLE I-1

MINERALS AND METALS FOUND ON THE UMATILLA FOREST

Mineral Metal	Net Import Reliance	Major Foreign Source	Status on Forest
Chromium	90%	South Africa, USSR, Zimbabwe, Turkey, Philippines	Known occurrences, small potential
Platinum Group	89%	South Africa, USSR, United Kingdom	Minor placer by-product
Mercury	62%	Algeria, Spain, Italy, Canada, Yugoslavia	Known occurrences, small potential
Zinc	62%	Canada, Mexico, Honduras, Spain	Production by-product from precious metals mining
Tungsten	59%	Canada, Bolivia, Rep. of Korea	Known occurrences, small potential
Gold	56%	Canada, USSR, Switzerland	Over 3.5 million ounces produced in NE Oregon, much from Umatilla, considerable future potential
Silver	45%	Canada, Mexico, Peru, United Kingdom	Over 5 million ounces produced in NE Oregon, much from Umatilla, considerable future potential
Antimony	43%	South Africa, China, Mexico, Bolivia	Known occurrences, small potential
Vanadium	25%	South Africa, Chile, USSR	Minor occurrence in gold-quartz vein, insignificant potential
Copper	13%	Canada, Chile, Zambia, Peru	Nearly 10,000 tons produced in NE Oregon, little from Umatilla vicinity, limited potential
Lead	8%	Canada, Peru, Mexico, Honduras, Australia	Production by-product from precious metals mining
Molybdenum	Net Export		Several occurrences, significant future potential

TABLE I-2

EVALUATION CRITERIA FOR LOCATABLE MINERALS
Umatilla National Forest

	CATEGORY				
EVALUATION CRITERIA	I	II	III	IV	V
1 Potential for Substantial Development/Production Within 10 Years	High	Moderately high	Moderate	Low	Very low, based on current knowledge
2. Current Activity Level	Production or development in progress or pending investment decision	Comprehensive exploration, development likely; may include some small scale production	Exploration programs which may include sampling, geochemical and geophysical surveys, geologic mapping, reconnaissance drilling, may include some hobby-size production	Sporadic exploration with occasional isolated intense programs by companies or prospectors	Occasional interest by prospectors
3. Land Position	Long-term maintenance of claims by established mineral companies/ individuals	Long-term	Intermittent by established mineral companies/ individuals, long-term by prospectors	Short-term by established companies/ individuals, intermittent by prospectors	Sporadic
4. Geology	Known and favorable for development of significant ore deposits	Known and considered favorable from comparison with other producing districts	Not well-known, but appears to have favorable characteristics	Not well-known, some favorable characteristics	Either unknown or unfavorable
5 Reserve/Resource	Ore reserves established; will sustain significant production	Presence of, or strong potential for, substantial resource; may include small reserves	Potential for large resource is unknown; small resources, possibly some very small resources	Some mineral occurrences, but not enough information to establish	Unknown

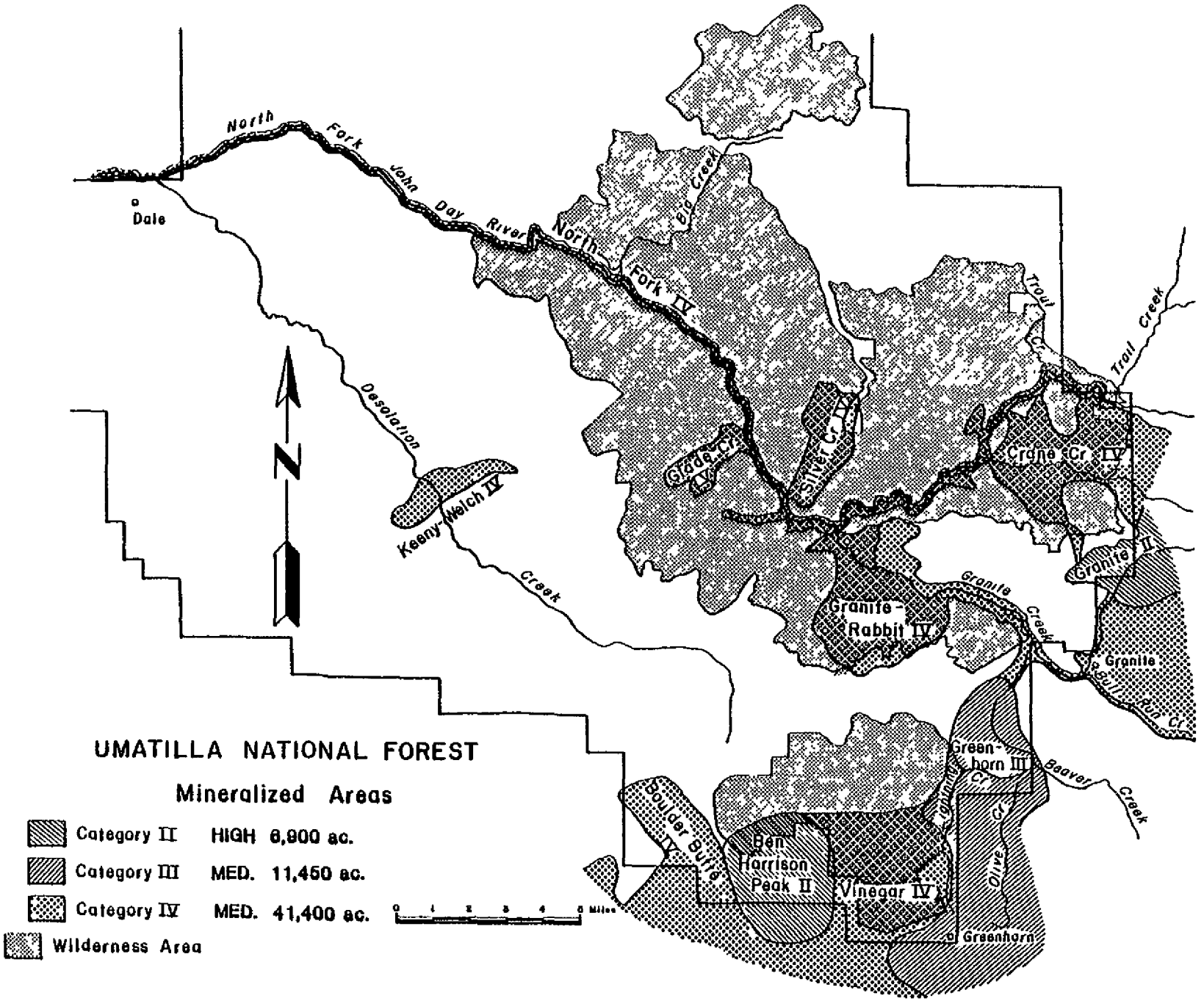

North Fork John Day River
Dale
Big Creek
North Fork IV
Desolation
Keeny-Welch IV
Creek
Grade Cr. IV
Silver Cr. IV
Trout Cr.
Trail Creek
Crane Cr. IV
Granite II
Granite Creek
Granite-Rabbit IV
Granite Gulch
Granite Boulder Run Cr.
Green-horn III
Beaver Creek
Boulder Butte IV
Ben Harrison Peak II
Vinegar IV
Oliver Cr.
Greenhorn
UMATILLA NATIONAL FOREST
Mineralized Areas
Category II HIGH 6,900 ac.
Category III MED. 11,450 ac.
Category IV MED. 41,400 ac.
Wilderness Area
0 1 2 3 4 5 Miles

FIGURE I-1

MINERALIZED AREAS

The following descriptions apply to areas delineated on the basis of information gathered from numerous references. Factors taken into consideration include the geology, historical production information, available sample data, and present mining claim records derived from Bureau of Land Management files.

Ben Harrison Peak - Category II

This area surrounds Ben Harrison Peak and extends onto the Malheur National Forest to the south. It includes part of the old Greenhorn mining district. It is located on the eastern margin of a Jurassic or Cretaceous quartz diorite-granodiorite intrusive, with bedrock also including metavolcanics, argillite, sandstone, gabbro, serpentinite, and a serpentinite matrix me' ge of late Paleozoic to Triassic age. A few cappings of Tertiary tuffaceous sedimentary rocks and basaltic-to-andesitic flows are found in the vicinity of the Tiger Mine and Dupratt Springs. Glacial material mantles the high cirques and drainages. Mineralization occurs in north-to-northeasterly trending quartz veins, stringers, and breccia zones. Ore minerals include pyrite, arsenopyrite, sphalerite, tetrahedrite, galena, chalcopyrite, molybdenite, pyrargyrite, stephanite, and stibnite. Principal values are in silver with subordinate gold (Brooks and others 1983).

The area is currently heavily claimed, with a considerable amount of exploration work being performed each operating season One operator has reactivated the Tempest Mine and other nearby properties on both the Umatilla and Malheur Forests. Some development work has been done, and a few ore shipments have been made. The operator plans to install a small mill to concentrate ore from these properties.

The recently created North Fork John Day Wilderness complex includes the northern portion of this area, although most of the existing mining claims were excluded. Given strong silver prices; continued exploration, development, and some production can be expected in the area outside the wilderness.

Boulder Butte - Category IV

This area adjoins the Ben Harrison Peak area on the east, and extends over Boulder Butte to Indian Rock on the west. It is contiguous with the South Slope area on the Malheur National Forest. Much of the area is underlaid by quartz diorite and granodiorite of Jurassic or Cretaceous age. Patches of peridotite, metavolcanic, and metasedimentary rock of late Paleozoic to Triassic age are also exposed in the northeastern and southeastern portions of the area. Glacial material mantles the high valleys (Ferns and others 1984; Brooks and others 1983; Evans 1984). The only prospect with any written information is the Donaldson Mine in Section 30, T.9S., R.34E. It is described as having several veins containing pyrite, chalcopyrite, tetrahedrite, and malachite (Oregon Department of Geology 1984).

Currently the only claims held in the area are in the vicinity of the Donaldson Mine. This occurrence, plus the favorable geology and proximity of other mines and prospects, will undoubtedly serve to maintain some interest in the area. Periodic exploration ventures may be expected.

Crane Creek - Category IV

Crane Creek adjoins the Granite area on the south and the North Fork area on the north. On the east it is contiguous with the Onion Creek area on the Wallowa-Whitman National Forest. It includes a portion of the old North Fork mining district. Bedrock over roughly two-thirds of the area is argillite and chert of late Paleozoic to Triassic age. Small Jurassic or Cretaceous quartz diorite-granodiorite stocks are located northeast and southeast of Tencent Butte. The east central portion of the area is capped by Tertiary volcaniclastics and flows (Evans and Conyac 1983; Brown and Thayer 1966). There are a few lode and placer prospects, but little is written on them.

Past production estimates:

Mine	Location	Production	References
Klopp Placer	S.34, T.8S., R.35-1/2E.	$342,000	Pardee and Hewett 1914

Estimated metal output: 16,400 oz. of gold; 7,000 oz. of silver.

The Klopp Placer is a glacial moraine of very low grade which was worked by hydraulic methods. It is unlikely that similar material could be worked profitably today while meeting water quality and reclamation standards. Some potential for small placer operations undoubtedly exists in pockets of unworked material. Very little is known about the potential of the lode prospects.

All of the National Forest land west of Forest Service Road 73 is now within the North Fork John Day Wilderness, and is therefore withdrawn from mineral entry. The historically gold-producing gravels along the courses of Crane and East Tencent creeks, plus the proximity of the Granite district, make it likely that development of mineral deposits on valid existing claims within the wilderness may continue.

Glade Creek - Category IV

This area constitutes the drainage of Glade Creek which flows into the North Fork John Day River at Dixson Bar. Bedrock over the eastern portion of the area is late Paleozoic to Triassic argillite and volcanics. Jurassic or Cretaceous quartz monzonite is exposed on the north, and the area terminates at a capping of Tertiary basalt to the west. Bedrock is obscured to the south by a mantling of Quaternary glacial outwash and alluvium (Evans 1984).

The Glade Creek drainage was identified by Evans and Conyac (1983) as having moderate potential for gold on the basis of pan concentrates taken from the stream. This area is now entirely within the North Fork John Day Wilderness, and therefore withdrawn from mineral entry. Although there are several mining claims located along Glade Creek which predate the wilderness designation, the remoteness of the area and meager available information on its mineral potential will likely limit the amount of mineral activity.

Granite - Category II

The Granite area covers a portion of the old Granite mining district to the north of the town of Granite. Most of the area is on the adjacent Wallowa-Whitman National Forest. Bedrock on the Umatilla portion of the area is argillite and chert of late Paleozoic to Triassic age. Lode mineralization occurs in northeasterly trending veins and shear zones. Ore minerals include pyrite, arsenopyrite, chalcopyrite, sphalerite, tetrahedrite, and some pyrargyrite, proustite, and native gold. Some Tertiary and younger gold-bearing placer deposits also occur in the area (Koch 1959; Brooks and others 1982).

Past production estimates from mines within and adjacent to the Umatilla National Forest:

Mine	Location	Production	References
Ajax	S.22, T.8S., R.35-1/2E.	$40,000	Brooks and Ramp 1968
Cougar-Independence	S.22 & 27, T.8S., R.35-1/2E.	767,000	Brooks and others 1982; Koch 1959
New York	S.27, T.8S., R.35-1/2E.	8,000	Brooks and Ramp 1968
Total		$815,000	

Estimated metal output: 24,600 oz. of gold; 29,700 oz. of silver; 8,000 lbs. of copper; 900 lbs. of lead.

Several mining companies and numerous individuals have been actively exploring and, in some cases, developing mines and prospects in the area. Most placer ground is outside the area, but there are a few placer claims, at least one of which supports a small seasonal mining operation. The main potential for the area lies with the possibility of developing minable grades and tonnages on the lode deposits. Given favorable gold and silver prices; continued exploration, development, and possible production may be expected.

Granite-Rabbit - Category IV

The Granite-Rabbit area adjoins the Greenhorn area to the south along Clear Creek and the North Fork area to the north. To the east, on the Wallowa-Whitman National Forest, it is contiguous with the Mt. Ireland area. Also, it includes portions of the old Granite and North Fork mining districts. A wide variety of rock types is exposed, including (in decreasing order) Jurassic diorite; late Paleozoic to Triassic brecciated argillite and chert and metasedimentary and metavolcanic rock; Jurassic or Cretaceous quartz monzonite; Permian or older pyroclastic and volcanic rocks; Triassic peridotite and serpentinite; and Tertiary basalt. Tertiary-Quaternary mudflow deposits and colluvium mantle the northeastern portion of the area, and Quaternary glacial and alluvial materials are found in the stream drainages and high slopes (Evans 1984; Brooks and others 1982).

Little is known about the lode mineralization. The Gold Bug Mine in the southeast quarter of Section 31, T.8S., R.35E. is reported to have shown some good gold-silver values in its old workings (Oregon Department Geology 1984). Placer deposits along Granite and Clear creeks were extensively worked in the past. Portions of the stream channels were dredged to recover gold.

Past Production:

Mine	Location	Production	References
Granite Cr. Placers*	Granite, Bull Run, & Clear creeks	$2,422,000	Brooks and others 1982 Evans 1984

Total estimated metal output: 89,200 oz. of gold; 20,900 oz. of silver.

* Including production from deposits within the Wallowa-Whitman National Forest.

Much of the area south of Granite Creek and west of Indian Creek is now within the North Fork John Day Wilderness and is therefore withdrawn from mineral entry. Numerous claims predating the wilderness designation exist in the area, particularly in the vicinity of Granite Creek. Several placer operations ranging from hobby-size to small commercial ones are seasonally active on bench gravels untouched by early mining. The area has potential for numerous small placer mines on valid existing claims, but the potential for lode mines is unknown.

Greenhorn - Category III

The Greenhorn area includes the main portion of the old Greenhorn mining district, encompassing the townsite of Greenhorn and extending into the Clear Creek drainage to the north Approximately a third of this area is on the Umatilla National Forest, with the majority on the Wallowa-Whitman and a small part on the Malheur. A wide variety of rock types is found, including late Paleozoic-to-Triassic argillite, gabbro, metavolcanics, serpentinite, and serpentinite matrix melange; Jurassic or Cretaceous quartz diorite and grano-diorite intrusives; Tertiary volcanic flows, volcaniclastics, and gravel deposits; and Quaternary glacial and alluvial sediments. Lode mineralization occurs in narrow quartz veins and shear zones striking northwesterly to northeasterly and in discontinuous stringers and pockets in the pre-Tertiary rocks. Placer gold is found in Tertiary gravels and younger stream channel and bench deposits (Brooks and others 1982; Ferns and others 1983, Brooks and others 1983)

Past production from properties within or immediately adjacent to the Umatilla National Forest:

Mine	Location	Production	References
Bluebird	S.11, T.9S., R.35E.	$5,000	Brooks and others 1982
Granite Cr. Placers	(see under Granite-Rabbit)		
IXL	S.10, T.10S , R.35E.	20,000	Ferns and others 1983
Red Boy	S.10, T.9S , R.35E	1,000,000	Brooks and others 1982
Ruby Creek (lode)	S.22, T.9S , R 35E	6,000	Brooks and others 1982
Total		$1,031,000	

Estimated metal output (excluding placers): 48,800 oz. of gold, 43,700 oz of silver.

A portion of the area west of Clear and Spring creeks is now within the North Fork John Day Wilderness, and therefore withdrawn from mineral entry The area is currently heavily claimed for lode and placer deposits, including the section within the wilderness. The large number of mineral occurrences keeps prospectors interested, but the apparent small size of the targets has generally discouraged larger companies from conducting substantial exploration programs. Several small placer mines are seasonally active.

Continued prospecting outside the wilderness can be expected both by individuals and by larger mining companies conducting regional exploration programs. Small pocket mines outside the wilderness, and possibly on valid claims within it, will undoubtedly be developed and operated as economic conditions permit. Several small, but relatively rich, placer deposits will remain seasonally active.

Keeney-Welch - Category IV

Keeney-Welch is a small area in the old Desolation Creek mining district, located approximately halfway between the settlements of Dale and Granite. Rock units mapped in the area include metavolcanics, argillite, diorite, and serpentinite of late Paleozoic to Triassic age A mantle of Quaternary glacial and alluvial material covers much of the lower lying areas (Brown and Thayer 1966).

Several old lode and placer workings are found in the area, but there is no information on their mineralization or production. There are currently numerous lode and placer claims, but little substantial mining activity. Little more than general reconnaissance and limited exploration programs can be expected in the near future.

North Fork - Category IV

Covering the main course of the North Fork John Day River, the area extends upriver from Dale to the mouth of Trail Creek. It is contiguous with the Glade Creek, Silver Creek, Granite-Rabbit, and Crane Creek areas, and includes the Oregon Gulch drainage. Although a few lode prospects are found along the course of the river, this is essentially a placer mining area. The river cuts through a wide variety of rock types including argillite, chert, metadiorite, peridotite, and amphibolite of late Paleozoic to Triassic age; and diorite of Jurassic age. A Jurassic or Cretaceous quartz monzonite stock is exposed just south of the river in the Basin and Glade Creek drainages (Evans and Conyac 1983; Evans 1984).

Lode mineralization in the vicinity of Camp Creek is described as a shear zone containing some sulfides with low gold concentrations. Also in Oregon Gulch, quartz and calcite veins and stringers cutting argillite and chert are reported to contain sulfides and some gold (Oregon Department Geology 1941). Placer deposits are found along the river channel and on benches above the river.

Estimates of past production:

Mine	Location	Production	References
N. Fork Placers (pre-1914)	Numerous locations along river	$893,000	Pardee and Hewett 1914
Davis Placer	Main river channel	75,000	Plog and Suchy 1966
Calhoun and Howell plcr.	Main river channel	200,000	Plog and Suchy 1966
Total		$1,168,000	

Estimated metal content: 50,700 oz. of gold; 15,100 oz. of silver.

Most of this area, including all of the portion east of Big Creek, is now within the North Fork John Day Wilderness, and therefore withdrawn from mineral entry. Prior to wilderness designation, the area was almost completely covered with mining claims, and numerous hobby-size and a few small scale commercial placer operations are still seasonally active. The U S. Bureau of Mines estimates that a resource of 2.8 million cubic yards of gravel averaging $1.00 per yard at $500 per ounce gold exists along the river (Evans and Conyac 1983). Values per yard range considerably above and below this figure, and the gravel volume is spread over several miles of river channel and terraces. A combination of difficult access and generally (except for the early 1980's) unfavorable gold prices have prevented any larger scale exploitation of the placer deposits and exploration for possible lode deposits in this area of favorable geology. It is likely that development will continue on placer deposits outside and on valid existing claims within the wilderness.

Silver Creek - Category IV

The Silver Creek area adjoins the North Fork area at the mouth of Silver Creek and includes the Silver Creek drainage. Country rock is argillite and chert of late Paleozoic to Triassic age. Little is known of the mineralization other than the Bureau of Mines and U.S. Geological Survey found anomalous gold values in the stream sediments (Evans and Conyac 1983). The source of the gold is unknown since Silver Creek drains an area with no historic lode mining activity.

This area is now almost entirely within the North Fork John Day Wilderness, and therefore withdrawn from mineral entry. Several placer claims predating wilderness designation are within the drainage, but no significant exploration or mining activity is taking place.

Vinegar - Category IV

The Vinegar area is between the Ben Harrison Peak area on the west and the Greenhorn area on the east. It is contiguous with the South Slope area on the Malheur National Forest to the south, and lies north and east of Vinegar Hill within a portion of the old Greenhorn mining district. Bedrock includes serpentinite and serpentinite matrix melange, gabbro, metavolcanics, and argillite of late Paleozoic to Triassic age; and Jurassic or Cretaceous quartz diorite. Mineralization is confined to generally northwesterly-trending quartz veins and shear zones. Ore minerals include pyrite, arsenopyrite, chalcopyrite, tetrahedrite, galena, sphalerite, and some molybdenite (Brooks and others 1983; Evans 1984).

Past production estimates:

Mine	Location	Production	References
Bimetallic	S.7, T.10S., R.35E.	small	Brooks and others 1983
Intermountain	S.6, T.10S., R.35E.	$5,000	Brooks and others 1983
King Tut	S.31, T.9S., R.35E.	small	Brooks and others 1983
Little Giant	S.5, T.10S., R.35E.	small	Brooks and others 1983
Total known		$5,000	

Estimated metal content: 50 oz. of gold; 8,000 oz. of silver.

The area is now largely within the North Fork John Day Wilderness, and therefore withdrawn from mineral entry. Numerous lode and a few placer claims predating the wilderness designation are located within the area. Larger companies as well as individual prospectors are seasonally active, conducting reconnaissance and sampling programs. Based on limited information, the area appears to have potential for development of lode silver and gold deposits outside the wilderness and on valid existing claims within it.

Other Areas

Other areas where geologic conditions appear favorable for mineral deposits exist on the Forest outside the areas shown in Figure I-1. A zone of hydrothermally-altered volcaniclastic rocks was recently noted on the southeast flank of Madison Butte, south of Heppner (Ferns and Brooks 1986). The old Tucannon and Asotin mining districts are found at the northeastern end of the Forest, and a Bureau of Mines study revealed occurrences of lode and placer gold, base metals, and placer uranium in that area (Munts 1983). Silicic volcanics found over a wide area at the southeastern end of the Forest are also potential hosts for mineral deposits.

LEASABLE MINERALS

OIL AND GAS

Much of the Forest is within the Eastern Columbia Basin of Oregon and Washington. The basin has been recognized for many years to have a potential for hydrocarbons within or beneath the Miocene Columbia River Basalt flows. Exploration has been limited and sporadic due to hard drilling in the basalt flows, and difficulty of exploring beneath them. Tertiary and Mesozoic carbonaceous sediments provide a potential source of hydrocarbons which could be trapped by broad folds and fault blocks resulting from Tertiary and earlier tectonic activity. Tertiary and pre-Tertiary sandstones, and porous Tertiary volcanics provide suitable reservoirs (Valentine 1983; Ferns and Brooks 1986). Recently, numerous interests, including major oil companies, have obtained leases in the vicinity.

Figure I-2 shows the portions of the Forest vicinity considered prospectively valuable for oil and gas by the U.S. Geological Survey. Leases and lease applications have been received for lands outside of, as well as within, the prospectively valuable areas. Although some leasing applications were withdrawn and several leases have now terminated, 20 to 25 percent of the region's oil and gas leases are located within the Forest. To date, no drilling has occurred.

COAL

A new coalfield containing the most extensive lignite deposit in the State of Oregon has been found in northern Wallowa County, extending into the State of Washington (Ferns 1985). The lignite occurs within sedimentary rocks interbedded in basalt flows of the Columbia River Group. A structural depression, known as the Troy Basin, which started to form during mid-to-late Miocene time created an environment favorable for formation of peat bogs. These peat deposits were later buried by additional sediments and basalt flows, and turned into lignite.

Although the lignite is rarely exposed on the surface, it reaches thicknesses of up to 40 feet. Industry geologists who recently explored the deposit report that the lignite occurs in two seams separated by a 3-foot clay seam. The upper, cleaner seam averages 15.5 feet thick, and the lower seam, which contains some clay and silt, averages 27 feet in thickness. The sedimentary interbed containing the lignite underlies a large portion of the Troy Basin, thereby indicating a rather large potential tonnage of lignite. This potential tonnage is limited by several factors, however, including: (1) The environment in which the peat was deposited contained topographic highs; (2) parts of the lignite beds were destroyed by later lava flows which sank through the overlying sediments; (3) interflow erosional periods cut canyons through the lignite which were filled by subsequent outpourings of lava; (4) the beds have been folded and faulted by continuing uplift; and (5) later erosion has removed much of the lignite-bearing sediments.

Based on currently available information, a hypothetical resource of nearly 2 billion tons of lignite has been estimated. Industry currently values only the upper, cleaner coal seam where it is covered by less than 150 feet of overburden. Under these restrictions, the estimated reserves are 240 million tons. Only a small portion of this tonnage is within the Forest boundaries.

In the past, coal was mined at Coalmine Hill and on Johnson Creek in the Arbuckle Mountain area, southeast of Heppner, Oregon. Four coal patents were issued between 1881 and 1904, and prospect pits are still evident. Discontinuous beds of coal and carbonaceous shale up to 7 feet thick are interlayered with arkosic sandstone of the Herren formation (Ferns and Brooks 1986). Known occurrences of these beds are too thin and structurally deformed to be of commercial interest.

GEOTHERMAL

Although a few hot springs are known to occur in and near the Forest, there does not presently appear to be a high potential for geothermal resource development. There currently are no geothermal leases or lease applications within Forest boundaries. The U.S. Geological Survey considers some lands prospectively valuable for geothermal resources in the vicinity, some of which partially overlap the Forest boundaries (Figure I-2).

MINERAL MATERIALS

Sand, gravel, crushed rock, building stone, and some limestone occur within the Forest boundaries. These are all low unit value materials which must be near transportation routes, and usually the point of consumption, to be utilized. A continuing need for some quantities of these materials can be anticipated with increased demand during periods of growth.

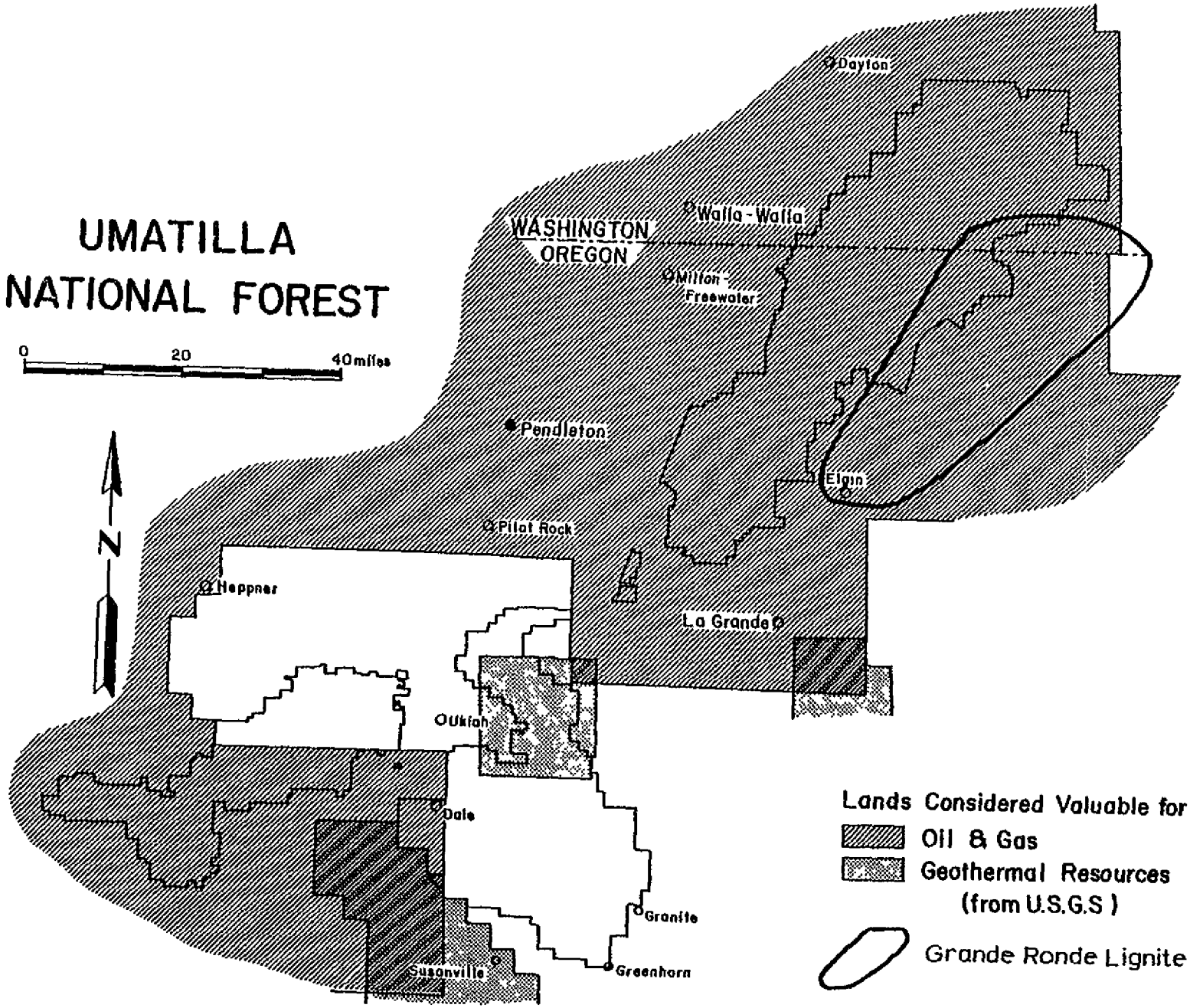

UMATILLA
NATIONAL FOREST
0
20
40 miles
N
WASHINGTON
OREGON
Dayton
Walla - Walla
Milton - Freewater
Pendleton
Elgin
Pilot Rock
Heppner
La Grande
Ukiah
Dale
Granite
Greenhorn
Susanville
Lands Considered Valuable for
Oil & Gas
Geothermal Resources
(from U.S.G.S)
Grande Ronde Lignite

FIGURE I-2

REFERENCES

Brooks, H. C., Ferns, M. L., Mullen, E. D. Geology and gold deposits map of the Granite quadrangle, Grant County, OR. Ind. Map GMS-25. [Place of publication unknown]: Oregon Department of Geology and Minerals; 1982.

Brooks, H. C.; Ferns, M. L.; Wheeler, G. R.; Avery, D. L. Geology and gold deposits of the NE quarter of the Bates quadrangle, Grant County, OR. Ind. Map GMS-29. [Place of publication unknown]: Oregon Department of Geology and Minerals; 1983.

Brooks, H. C.; Ramp, L. Gold and silver in Oregon. Mineral Ind. Bull. 61. [Place of publication unknown]: Oregon Department of Geology and Minerals; 1968.

Brown, C. E.; Thayer T. P. Geologic Map of the Canyon City Quadrangle, northeastern Oregon. Misc. Geo. Inv. Map I-447. [Place of publication unknown]: U.S. Geological Survey; 1966.

Evans, J. G. Geologic Map of the Desolation Butte Quadrangle; Grant, Union, and Umatilla Counties, OR. [Place of publication unknown]: U.S. Geological Survey; 1984. [in preparation]

Evans, J. G.; Conyac, M. D. Mineral resource potential of the North Fork John Day River Roadless Area, Grant County, OR, U.S. Geology Survey Map and Summary Report MF-1581A. [Place of publication unknown]: U.S. Geological Survey; 1983.

Ferns, M. L. Preliminary Report on Northeastern Oregon Lignite and Coal Resources, Union, Wallowa, and Wheeler Counties. Industries Open File Report 0-85-2. [Place of publication unknown]: Oregon Department of Geology and Minerals; 1985. 19 p.

Ferns, M.L. and Brooks, H.C. Geology and Coal Resources of the Arbuckle Mountain Coal Field, Morrow County, OR. Industries Open File Report O-86-5. [Place of publication unknown]: Oregon Department of Geology and Minerals; 1986.

Ferns, M. F.; Brooks, H. C.; Avery, D. G. Geology and gold deposits map of the Greenhorn quadrangle, OR. Ind. Map GMS-28. [Place of publication unknown]: Oregon Department of Geology and Minerals; 1983.

Ferns, M.L.; Brooks, H. C.; Wheeler, G. R. Geology and Gold Deposits Map of the Northwest Quarter of the Bates Quadrangle, Grant County, OR. Ind. Map GMS-31. [Place of publication unknown]: Oregon Department of Geology and Minerals; 1984.

Koch, Jr., G. S. Lode mines of the central part of the Granite mining district, Grant County, OR. Ind. Bull. 49. [Place of publication unknown]: Oregon Department of Geology and Minerals; 1959. 49 p.

Lindgren, W. The gold belt of the Blue Mountain of Oregon. U.S. Geologic Survey 22nd Annual Report, Part 2. [Place of publication unknown]: U.S. Geologic Survey; 1901: 551-776.

Munts, S.R. Mineral Investigation of the Wenaha-Tucannon Wilderness Study Area, Asotin, Columbia, and Garfield Counties, Washington; Wallowa County, OR. U.S. Bureau of Mines Summary Report MLA 20- 83; 1983.

Oregon Department of Geology and Mineral Industries. Field office files and verbal communication. [Place of publication unknown]; 1984.

Oregon Department of Geology and Mineral Industries. Oregon metal mines handbook, Northeastern Oregon - West Half (Grant, Morrow, and Umatilla Counties). Bulletin 14-B. [Place of publication unknown]; 1941. 157 p.

Pardee, J. T.; Hewett, D. F. Geology and Mineral Resources of the Sumpter Quadrangle. [Place of publication unknown]: Oregon Bureau of Mines and Geology, Mineral Resources of Oregon; 1(6): 1-161; 1914.

Plog, H.; Suchy, M. M. Report of mineral examination for verified statement No. OR-010001-F, Lee Temple (Claimant). Rep. for Job No. 94. [Place of publication unknown]: U.S. Department of Agriculture, Forest Service; 1966. 7 p.

Valentine, G.M. Geologic overview and hydrocarbon potential of the eastern Columbia Basin. Unpublished report; 1983.

APPENDIX J

APPENDIX J

DETERMINATION OF LANDS SUITABILITY

TABLE OF CONTENTS

	Page
Introduction	J-1
Definitions	J-1
The Process	J-3
Acres Tentatively Suitable for Timber Harvest (Table J-1)	J-6
References	J-7

APPENDIX J

DETERMINATION OF TENTATIVELY SUITABLE LANDS

INTRODUCTION

The regulation 36 CFR 219 (U.S. Laws, Statutes, etc. 1982) developed to implement the National Forest Management Act of 1976 (NFMA) specifies that during the forest planning process, lands which are not suited for timber production shall be identified in accordance with paragraphs (a) through (d) of section 219. Forest Service Manual 2415.2 (I.D. No. 73) defines three stages of analysis to identify "lands not suited for timber production" (36 CFR 219.14) (U.S. Laws, Statutes, etc. 1982). An analysis, called Stage I Analysis, addresses the biologic capability, and the availability and suitability of the National Forest land as specified in 36 CFR 219.14(a), paragraphs (1) through (4) (U.S. Laws, Statutes, etc. 1982). Other analyses, Stages II and III, address the requirements of 36 CFR 219.14, paragraphs (B) through (D) (U.S. Laws, Statutes, etc. 1982).

This Appendix describes the process, assumptions used, and the results of the Stage I Analysis for the Umatilla National Forest (on file at the Supervisor's Office in Pendleton, Oregon).

Section 219.14(a) of NFMA requires that "during the analysis of the management situation, data on all National Forest System lands within the planning area shall be reviewed and those lands within any one of the categories described in paragraphs (a)(1) through (4) of this section shall be identified as not suited for timber production—

1. The land is not forest land as defined in Section 219.3.

2. Technology is not available to ensure timber production from the land without irreversible resource damage to soils productivity or watershed conditions.

3. There is no reasonable assurance that such lands can be adequately restocked as provided in section 219.27(c)(3)."

4. The land has been withdrawn from timber production by an Act of Congress, the Secretary of Agriculture, or the Chief of the Forest Service.

DEFINITIONS

Adequate Stocking (Successful Regeneration)	The minimum stocking levels for regeneration in Region 6, measured 5 years after final harvest, are established as 125 well-distributed seedlings per acre for Douglas-fir and its associated species types, and 75 well-distributed trees per acre for ponderosa pine and its associated species types. These levels are based upon a consideration of the minimum number, size, distribution, and species composition of trees (established through a natural or artificial means) sufficient to provide full occupancy at the time of regeneration cutting or final harvest
Available Lands	Those lands which have not been withdrawn from timber production [36 CFR 219.14(a)(4)] (U.S. Laws, Statutes, etc. 1982).
Capable Lands	See Forested lands
Existing Technology	Existing technology includes all techniques and practices that have been demonstrated successfully as recognized by respected professionals or experts in the field of reforestation. Cost of techniques and practices will not be a criterion for excluding lands from the tentatively-suitable land base. Irrigation and soil importation practices will not be considered as existing technology.
Forested Lands	Land at least 10 percent occupied by forest trees (interpreted as forest tree crown canopy) of any size, or formerly having had such tree cover and not currently developed for nonforest uses [36 CFR 219 3] (U.S Laws, Statutes, etc 1982)

Forested Noncommercial	Trees not normally included in timber harvest for commercial purposes Includes juniper (Hall Ecotypes CJ-G1-11, CJ-S8-11, CJ-S1-11, CJ-S2-11); quaking aspen (Hall Ecotype MQ-MI) (Hall 1973), and riparian hardwood (no specified ecoclass but consisting of measurable areas of cottonwood) These types are considered nonforest.
Forest Trees	Trees that are normally included in timber harvest for commercial purposes.
Natural Regeneration	One mode of regenerating a forest. Natural regeneration occurs either from seedlings originating by natural seeding or from sprouts and other plants representing vegetative reproduction (Smith 1962).
Nonforest Uses	Lands developed for nonforest use include areas for crops or improved pasture, residential or administrative areas, improved roads of any width, adjoining road clearings, and powerline clearings of any width.
Reasonable Assurance	For the purposes of regeneration suitability decisions in the forest planning process, "reasonable assurance" is provided when: 1. One or more reforestation projects are known to (a) exist on National Forest System (NFS) or non-NFS lands within the subject ecosystem or land stratum; (b) have succeeded in meeting Regional standards for adequate restocking (as defined in a subsequent portion of the direction); and either (2) or (3.) below. 2. The practices used in achieving the regeneration success are known and are accepted by experts in the field of reforestation as being generally applicable to the ecosystem or land stratum being examined. "Generally applicable" is defined as having a perceived probability of at least 75 percent regeneration success. This assumes that the major reason for uncertainty is due to lack of homogeneity within the stratum. Further stratification is needed if large acreages of uncertain regeneration probability are involved. The further stratification should be undertaken to reduce uncertainty by breaking down the stratum to smaller acreages of either high probability of success (>75 percent) or low probability of success (<25 percent). Under the assumption that the uncertainty is due primarily to judgmental reliability, the three or four criteria also provide a break point for a decision concerning reasonable assurance 3. Research results exist that are applicable to the subject ecosystem or land stratum and provide the means to prescribe treatment(s) that will lead to successful reforestation Where a successful regeneration project cannot be found, or applicable research does not exist demonstrating that a prescription can be written to accomplish reforestation, reasonable assurance of regeneration has not been provided. The stratum or ecotype, therefore, will be classed as not suited for timber production due to regeneration difficulty.
Separate Suitability Component	Lands that grow less than 20 cubic feet of timber per acre per year, but are, or have been, more than 10 percent forested; and about which knowledge and understanding does not match the source, reliability, or quality of the information base developed for lands 20 cubic feet or greater.
Successful Regeneration	See Adequate Stocking

THE PROCESS

In July 1981, an ad hoc committee composed of Jim Simonson, Forest Silviculturist; Earle Rother, Forest Soil Scientist; and Pat Kelley, Planning Team Leader, was formed to select the factors which would affect regeneration. Worksheets for the forested plant communities were developed that defined the plant community types by slope, capability, regeneration limitations, and operability limitations. See Appendix B of Stage 1 Analysis (USDA Forest Service 1984).

The specific regeneration factors[1] selected were:

1. Stoniness – rock fragment (greater than 3/4-inch size) content exceeding 35 percent by volume.
2. Rooting Depth – soils with less than 10" rooting depth.
3. Aspect – southerly aspects (SE, S, SW, and W) 135° to 271°.
4. Elevation – less than 4000' or greater than 5500'.
5. Precipitation – 25" or less (Curt Johnson's Isohyetal Map – USDA Forest Service 1978).
6. Competition – rapid invasion by grass or shrubs.
7. Cold soils.

The worksheet columns for each plant community/SRI combination were completed using the 1978 SRI.

The ad hoc committee also developed the following assumptions to guide completion of the worksheets:

1. Available Lands – Areas on the Forest which are administratively withdrawn are wildernesses and Research Natural Areas (RNA's). In addition, established, developed recreation sites, administrative sites, roads, and powerline rights-of-way will not be considered available for timber production. See Appendix B of Stage 1 Analysis (USDA Forest Service 1984).
2. Regeneration will be achieved using accepted and usual silvicultural practices and standards, such as selection of quality nursery stock, planting methods that best assure establishment of the seedling, protection from animal damage, and other practices that are generally considered "state-of-the-art" by silviculturists. Irrigation and importation of topsoil are examples of practices that are not usual
3. There are no significant forested lands that are unsuitable due to irreversible resource damage. Such lands can be harvested without irreversible damage to soil or water resources if the proper logging system is used. Most of the areas formerly classified as "marginal" are included in the tentatively capable, available, and suitable category, with logging methods tailored to minimize site impacts.
4. Economics will not be included as a limiting factor during Stage I Analysis Stage I considers only the physical and environmental aspects of suitability.
5. All accepted silvicultural treatments and harvest methods such as group selection, helicopter logging for all species, etc., will be recognized as being viable.

---

[1] A weighting system was not applied to these factors Generally, one factor by itself will not cause a Plant Community Type (PCT)/Soil Resource Inventory Mapping Unit (SRI M.U.) combination to be classified as unsuitable For example, within the CW-G1-11 plant community, SRI M U. #80 is unsuitable due to two factors - stoniness and shallow soils In addition, these shallow soils have a high evaporation rate (USDA Forest Service 1978)

The worksheets and assumptions were sent to the management team (Forest Supervisor, principal staff, and District Rangers) for review. A meeting was held on November 17, 1982, to discuss the forms and the work required to complete the preliminary suitability determination. Each member of the management team, along with his/her staff, reviewed and provided the information requested in the 1920 (file number) memorandum dated November 27, 1981.

On January 8, 1982, recommendations for the preliminary suitability determinations were made and entered on the worksheets. These preliminary worksheets are available for review at the Supervisor's Office, 2517 S.W. Hailey Avenue, Pendleton, Oregon 97801.

During the month of January, representatives of the wood products industry, the Washington Department of Wildlife, and the Oregon Department of Fish and Wildlife reviewed the preliminary recommendations. They had no major concerns. The planning team also met with Tom Ortman and Don Boyer from the Regional Office on January 22, 1982, to discuss the process. They had no major comments.

After the data base was completed in August 1982, a computer summary of the Plant Community Types (PCT)/Soil Resource Inventory (SRI) unit combinations showed that there were more combinations than the preliminary work indicated. An ad hoc committee composed of Earle Rother, Jim Simonson, and Russ Holtorf 2dded the additional units to the preliminary list Appendix D of Stage 1 Analysis contains the comprehensive list of PCT/SRI unit combinations (USDA Forest Service 1984)

Below is a summary of the unsuitable PCT/SRI unit combinations.

1. The following PCT/SRI units were determined to be unsuitable due to regeneration difficulties. ("Reasonable assurance that regeneration would occur within 5 years after final harvest" could not be provided.)

PCT	SRI
24	1, 2, 3, 5, 8, 80, 91, 92, 93, 94, 012, 013, 014, 034, 041, 489, 524, 567, 812, 877, 900, 911, 912, 914, 915, 918, 919, 920, 922, 924, 927, 928, 947, 948, 958, 997
25	1, 2, 3, 5, 8, 80, 90, 91, 93, 94, 012, 013, 014, 034, 041, 085, 128, 129, 489, 524, 593, 877, 912, 914, 915, 918, 919, 947, 948, 958, 997
27	77
28	20, 50
30	1, 3, 91, 912, 915, 918, 920, 922, 924
39	52, 82
40	20, 51, 52, 53, 82

2. Suitability of the SRI complexes was based on the assumption that if 50 percent or more of the complex is dominated by unsuitable monotype SRI units, then the complex is considered unsuitable.

   Example

   Within plant community 24 (Stage 1 Analysis, Appendix E, page E-6) (USDA Forest Service 1984) SRI Mapping Unit (M.U.) 041 is 50 percent SRI Mapping Unit 4, 40 percent M.U. 1, and 10 percent M.U. 3. Mapping Units 1 and 3 are unsuitable for plant community 24; therefore, M.U. 041 is unsuitable.

3. PCT's were mapped at a much larger scale (1:15,840) than the SRI (1:63,360). The SRI units are much larger (less detailed) than the PCT units. Therefore, PCT designation takes precedence over SRI unit designators. Where both designators indicate regeneration difficulty (i.e, PCT 24/SRI 1), then the combination is labeled as unsuited. Where only the SRI designator indicates unsuitability, the combination is considered suited because of the likelihood of a PCT inclusion in an SRI delineation

4. Approximately 20 percent of the Douglas-fir/ninebark plant community has regeneration difficulty. Following is a summary of SRI units on which it is judged that PCT 30 will have regeneration difficulty: SRI 1, 3, 91, 912, 914, 915, 920, 922, and 924.

In September 1983, the process for determining regeneration difficulty was reviewed by an ad hoc committee comprised of Brent Frazier, Wildlife Biologist; Jim Simonson, Silviculturist; Earle Rother, Soils Scientist; and Paul Bouchard, Forester. It was appraised as meeting the intent of Regional Office direction.

On November 30 and 31, 1983, Brent Frazier, Earle Rother, and Jim Simonson presented the Forest suitability process for Regional Office review. The process was approved with conditions to update the Forest data base to include a land exchange culminated in November 1983 and to determine the disposition of lands growing less than 20 cubic feet per acre per year with greater than 10 percent cover.

The acres of land classified as tentatively meeting the separate suitability component definition have been placed in the unsuitable category for the following reasons: (1) All cells comprising the lands are scattered, noncontiguous and small; (2) each parcel meets one or more of the regeneration difficulty factors previously documented; (3) the estimated contribution of these lands to the total potential harvest and long-term sustained-yield is calculated to be three-tenths of 1 percent; and (4) the total area of these lands is approximately 1 percent of the total forested lands. These lands are therefore determined to require no further analysis.

TABLE J-1
ACRES TENTATIVELY SUITABLE FOR TIMBER HARVEST

	Not Suited For Timber Production	Totals
I. Total National Forest Area		1,511,114
A. *Other Ownerships*	108,639	
II. Net National Forest Area		1,402,475
A. Water	439	
B. Nonforest (less than 10% tree cover)	301,891	
C. Lands Developed for Other Than Timber Production Purposes (crops, improved pasture, residential, administrative areas, improved roads, powerline clearings)	14,032	
III. Forested Lands		1,086,113
A. Withdrawn from Scheduled Timber Production [219.14(a)(4)]		
1. Wilderness	236,401	
2. *Research Natural Areas*	30	
3. Other (such as Wild and Scenic Rivers, Experimental Forests — listed by reason)	0	
Subtotal	236,431	
B. Lands Growing Less Than 20ft.³/ac./yr.		
1. Lands classified as unsuitable	24,920	
2. Lands classified as suitable		
3. Lands classified as separate suitability component		
C. Irreversible Resource Damage [219.14(a)(2)]		
D. *Regeneration Difficulty* [219.14(a)(3)]	17,529	
E. Regeneration Difficulty Lands Classified as a Separate Suitability Component		
IV. Tentatively Suitable Forest Land		807,233
V. Total of Suitable and Nonsuitable Lands	595,242	807,233
VI. Suitable and Nonsuitable Land Summary Approved for Forest Planning Prior to Chief's Letter of July 15, 1983	484,826	914,516
VII. Land Status Under Current TM Plan	452,441	946,902

REFERENCES

Hall, Frederick C. Plant Communities of the Blue Mountains in Eastern Oregon and Southeastern Washington. R-6 Area Guide 3-1. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region; 1973 September. 62 p.

Smith, David M. The practice of silviculture, 7th ed. New York: John Wiley & Sons, Inc.; 1962 578 p.

U.S. Department of Agriculture, Forest Service. Soil resource inventory. Pendleton, OR: Umatilla National Forest. 1978 May. 331 p.

U.S. Department of Agriculture, Forest Service. Stage I Analysis. Pendleton, OR: Umatilla National Forest. 1984 April. 301 p.

U.S. Laws, Statutes, etc.; Federal Register, 36 CFR 219. National forest system land and resource management planning. Act of July 1, 1982. 29 p.

APPENDIX K

APPENDIX K

CHOICE OF TIMBER HARVEST METHOD

TABLE OF CONTENTS

	Page
Harvest Methods	K-1
Description of Silvicultural Systems	K-1
Criteria	K-2
Culmination of Mean Annual Increment	K-3
Optimality of Clearcutting	K-3
Management Strategies	K-3
Rationale for Choice of Harvest Methods	K-6
All Working Groups	K-6
Ponderosa Pine Working Group	K-6
North Associated Working Group	K-8
South Associated Working Group	K-9
Lodgepole Pine Working Group	K-11
References	K-13

APPENDIX K

CHOICE OF TIMBER HARVEST METHOD

HARVEST METHODS

Harvest methods include both even-aged and uneven-aged silvicultural methods. Even-aged harvest methods (silvicultural treatment methods) generally include stand regeneration by clearcutting, shelterwood cutting, or seed tree cutting. Uneven-aged harvest methods (silvicultural treatment methods) generally include individual tree selection and group selection cutting.

Appendix K documents the rationale for choosing the broad harvest methods (even-aged or uneven-aged) to be applied on the Forest. An estimate of the most likely harvest methods to be used on the Forest was needed in order to project effects and predict costs and yields for the Forest Plan. To do the evaluation, silvicultural systems were broadly matched with the overall planning objectives and the physical and ecological characteristics of the Forest. The specific harvest treatment methods (such as clearcutting, shelterwood cutting, or group selection) will be determined on a site-specific basis. Individual sites will be managed as identified in silvicultural prescriptions written or approved by certified silviculturists, and included in project environmental analysis prepared by an interdisciplinary team and approved by the appropriate line officer.

DESCRIPTIONS OF SILVICULTURAL SYSTEMS

A silvicultural system is the entire process by which forest stands are tended, harvested, and replaced. The process includes the harvest of the current mature trees, the reforestation of the site, culturing of the new stand, and repetition of the cycle. Silvicultural systems are adaptations of natural occurrences. Natural regeneration is aided by wildfires, insects, diseases, wind, and other natural events that remove a single tree, small groups of trees, stands of trees, or sometimes even an entire forest.

Harvest cuttings occur as intermediate cuttings and regeneration cuttings. Intermediate cuttings such as thinnings and sanitation/salvage harvests remove trees to improve the health and vigor of the stand between the time of its establishment and the next regeneration cut. Regeneration cuttings are those that begin the orderly process of stand replacement. Regeneration methods strongly influence stand characteristics and management options

The two major silvicultural regeneration systems are termed even-aged and uneven-aged. An even-aged system, as its name implies, results in stands in which the majority of trees are of the same age class, and have a single dominant canopy level. In even-aged management, the three primary harvest methods are clearcutting, shelterwood, and seed tree. With the clearcutting method, all merchantable trees are removed, and the site is prepared for reforestation. Where desirable nonmerchantable trees exist, attempts are made to save them to aid in the restocking of the area. On the Forest, clearcuts are often planted with trees grown in special tree nurseries. Further stocking is acquired as seed from adjacent stands blow into the clearcut and germinates on the prepared ground. Even where planting is accomplished, it often happens that 10 years after harvest, the majority of the seedlings found in a clearcut may be natural regeneration from seed of adjacent trees.

The seed tree method is similar to the clearcut, except sufficient trees are left within the cutting unit to produce seed to either fully or partially restock the area. Typically three to eight trees per acre are left for seed, and the unit is planted with fewer trees than needed in a clearcut. The seed trees are also left to provide habitat for wildlife and for aesthetic purposes.

In the shelterwood method, 10 to 20 trees per acre are left to provide an appropriate environment for the establishment of seedlings of the desired species. Most regeneration under shelterwood strategies comes from seed of the shelter trees, although some fill-in planting may be done. The shelter trees are removed about 10 years after the initial shelterwood harvest, unless needed to meet other resource objectives.

The clearcut and seed tree harvest methods favor species that require sun for optimum growth, such as ponderosa pine, western larch, and lodgepole pine. The standard shelterwood method (in which the shelter trees are removed) favors the species left as shelter trees and species that do better under shade or partially shady conditions, such as Douglas-fir, grand fir, and Engelmann spruce.

An uneven-aged system results in stands in which a variety of age and size classes co-exist. The two primary uneven-aged management methods are single tree selection and group selection. The single tree selection method involves harvests of individually selected trees, and is based on an evaluation of each tree for its contribution to the desired stand structure. Regeneration and intermediate cuttings are done in the same operation. The desired regeneration occurs in the spaces left by the removal of single trees. Planting is almost never done with single tree selection; rather, natural regeneration from trees remaining in the stand predominates.

In the group selection method, trees are harvested in small groups, usually smaller than 2 acres in size. The openings created resemble miniature clearcuts. The created uneven-aged stand is actually a mosaic of small even-aged groups of varying age and size classes. As such, the group selection method uses the principles of the even-aged systems, but applied to much smaller areas of land. In group selection, plantings occur primarily where a seed source is not available for the species desired. Natural regeneration from seed of adjacent trees contributes much to the stocking. In mixed species stands such as the two Associated Working Groups on the Forest, the use of single tree selection causes a species shift from sun-loving species such as ponderosa pine and western larch, to shade-loving species like grand and subalpine fir. With group selection, the shift to shade-loving species is not as pronounced if a seed source of sun-loving species is present, or if such species were planted in the group openings.

CRITERIA

The criteria used to choose harvest methods were developed using both the criteria identified in the Regional Guide for the Pacific Northwest Region (USDA Forest Service 1984) and the direction provided in 36 CFR 219 27(b) (U.S. Laws, statistics, etc. 1982) for management prescriptions that involve manipulation of tree cover.

1. The harvest method must permit the production of sufficient volume of marketable trees to permit utilization of all trees which meet utilization standards and are designated for harvest.

2. The harvest method must permit use of a logging system which can remove designated trees without excessive damage to the residual stand while meeting other established land management objectives. Table 3-1 in the Regional Guide displays the compatibility of logging systems with common harvest-cutting methods. Generally, ground-based systems, helicopters, and cable systems using slack-pulling carriages are appropriate for all harvest methods, while balloon systems and cable systems without slack-pulling carriages are appropriate only for clearcuts.

3. The harvest method must be capable of providing special conditions that are required to meet resource management objectives. Table 3-2 in the Regional Guide displays commonly used harvest methods which achieve desired forest character. Generally, both even-aged and uneven-aged methods can meet desired forest character, with the exception of maximum wildlife species diversity and a mosaic of forest and opening, where even-aged methods are more appropriate. Other special conditions desired might include continuous canopy or continuous high-density live root mats, which might be required by critical soil conditions or needed to achieve special management and multiple-use objectives, such as streamside protection, wildlife needs, and visual resource objectives. The method must assure conservation of site productivity and of the soil and water resources.

4. The harvest method must permit control of vegetation to establish desired numbers and rates of growth of trees, as well as other vegetation needed to achieve special management objectives. Tables 3-3 and 3-4 in the Regional Guide outline these harvest methods. Generally, both even-aged and uneven-aged methods can be used in vegetation zones occurring on the Forest. Even-aged methods are more appropriate for wildlife forage production and optimum tree seedling and sapling growth, while uneven-aged methods are often better suited for meeting visual and riparian objectives.

5. The harvest method must promote a stand structure and species composition which minimize serious risk from insects, disease, animal damage, and wildfire, and allow treatment of existing insect, disease, and fuel conditions. Table 3-5 in the Regional Guide displays harvest methods favorable to the reduction and treatment of these agents. Generally, uneven-aged methods are not applicable where dwarf mistletoes, root rot diseases, indian-paint fungus, western spruce budworm, and Douglas-fir tussock moth present serious risks.

6. The harvest method must assure that harvested lands can be expected to be restocked adequately within five years.

7. The harvest method must be practical and economical in terms of transportation and harvesting requirements, and preparation and administration of timber sales. The method shall not be chosen primarily because of the greatest dollar return or timber output, but these factors should be considered.

8. The harvest method and associated cultural practices must be capable of protecting long-term site productivity as well as ecosystem diversity. Where plant community characteristics allow, the harvest method should promote a mix of at least two species in the managed stand throughout the rotation or conversion period, and preferably a stand composition that closely mimics natural stand conditions developed from pre-European influences, particularly natural fire.

CULMINATION OF MEAN ANNUAL INCREMENT

Minimum rotation lengths are based upon the length of time required to achieve volume production equivalent to at least 95 percent of culmination of mean annual increment. Exceptions are permitted for the use of sound silvicultural practices, for salvage and sanitation harvesting, or for the removal of a particular species of tree after considering the multiple-use objectives for an area.

OPTIMALITY OF CLEARCUTTING

The National Forest Management Act of 1976, Section 6(g)(3)(f)(i) states that clearcutting is only to be used where it is found to be the optimum method. Further direction is contained in the Regional Guide, 36 CFR 219.36 criteria, and Forest Service Manual 2471.1. Where even-aged management is appropriate and desired, clearcutting will be compared to both shelterwood and seed tree methods. Determination of optimality will consider stand condition and structure, insect and disease problems, silvics of the tree species concerned, plant community, logging method feasibility, site characteristics, regeneration difficulty and probability of success, economics, and other factors, all in the context of meeting the resource objectives for that management area portrayed in the Forest Plan.

MANAGEMENT STRATEGIES

A total of 29 management strategies (management areas) have been developed for the Plan. All areas in the Forest will be allocated a management strategy under each alternative developed. The strategy descriptions are found in Appendix D of the FEIS.

The J1 Minimum Management Modeling Strategy was developed only to model minimal custodial management with no activities funded or authorized. It was used as a baseline for comparisons, but was not included as a strategy in any developed alternatives. It did not allow timber harvest and will not be further considered in the choice of harvest methods.

The "A" strategies have objectives that emphasize scenic and recreational values; the "B" strategies focus on wilderness; the "C" strategies emphasize wildlife, fisheries and riparian values; the "D" strategies highlight vegetation and range values; the "E" strategies emphasize timber and others; and the "F" strategies highlight watershed values. Refer to Appendix D for details on specific management strategies.

TABLE K-1
TIMBER MANAGEMENT PRIORITIES AND CONSTRAINTS BY MANAGEMENT STRATEGY
Umatilla National Forest

Strategy	Priority or Constraint
B1 D2 F2	No timber harvest
A1 A2 A6 A7 (wild) A8 A9 C1 C3A C7 (riparian zone) C8 F1 (<150' of streams) F3 F4 (as mapped) F5 (riparian zone)	Timber harvest is not scheduled. Some timber harvest may be permitted to meet other resource objectives.
A3 A4 A5 A7 (scenic and recreational) A10 C2 (lodgepole pine working group) C3 C4 C5 C6 C7 (uplands--Class 4 nonriparian zone) F1 (>150' from streams) F4 (as mapped) F5 (nonriparian zone)	Timber harvest is scheduled and permitted when compatible with other resource objectives.
D1 E1 E2	Timber harvest is scheduled. Forest-wide Standards and Guidelines will be met for other resources.

WORKING GROUPS

The Umatilla National Forest includes many plant communities (Hall 1973) which have differing characteristics and productivities. The plant communities have been grouped into four broad forest types which can be expected to yield similar outputs and responses under similar management strategies. These groupings are termed Working Groups. The four Working Groups on the Forest, the percentage of land area they occupy, and the plant communities they include are:

Working Group	Percent Land Area	Plant Community
Ponderosa Pine	3.9	CPG111, CPG112, CPS221, and CPM111
North Associated	40.4	CDG111, CDS611, CDS711, CWG111, CWG112, CWF311, CWS211, CWS811, CES311, and CES411.
South Associated	44.6	Same as North Associated except located on Heppner and North Fork John Day Ranger Districts.
Lodgepole Pine	11.1	CLG211, CLS511, and CLS411.

Both even-aged and uneven-aged harvest methods were available and evaluated within the Forest species working groups and management strategy combinations.

RATIONALE FOR CHOICE OF HARVEST METHODS

ALL WORKING GROUPS

All/B1, D2, F2

Timber will not be harvested from any areas under management strategies B1, D2, or F2.

All/A1, A2, A6, A7 (wild), A8, A9, C1, C34, C7 (riparian), C8, F1 (<150' of streams), F3, F4 (as mapped), and F5 (riparian).

Timber harvest is not scheduled under management strategies A1, A2, A6, A7 (along wild river sections), A8, A9, C1, C3A, C7 (in riparian areas), C8, F1 (within 150 feet of streams), F3, F4 (as mapped), and F5 (in riparian areas). However, timber could be harvested to meet the special objectives of the given management strategy. Salvage harvests would be allowed only if compatible with meeting the objectives for the strategy. Salvage will not normally be allowed in old growth (C1). Both even-aged and uneven-aged methods are possible (Burns 1983).

The objectives of strategies A1, A2, A6, and A7 are to maintain a natural or near-natural appearing landscape. Strategies A8 and A9 emphasize scenic and special interest areas Uneven-aged management can be aesthetically pleasing when properly applied and is the preferred harvest system (Burns 1983). The goals of C3A and C8 are to provide high levels of quality elk habitat (cover and forage) and, additionally (in C8), to provide visual diversity and protection of erosive soils and watershed values. Uneven-aged management techniques are the preferred methods for accomplishing these objectives. The emphases of C7, F1 (<150' of streams), the unscheduled area of F4, and F5 (riparian) all deal with protection of stream and riparian values for municipal uses, fisheries, and watershed quality and quantity. The objectives of these strategies would best be met, in most cases, by uneven-aged management techniques that minimize unit size, provide for large areas of continuous high canopy, and disperse harvest activities. Under strategy F3, the choice of harvest cutting method would be determined by the objectives of the specific administrative study. Both even-aged and uneven-aged choices could be anticipated. All studies there to date have been concerned with even-aged methods.

Even-aged management in small-scale units (up to 3 acres) would be acceptable in some cases to enhance scenic views, to promote an understory canopy in an old growth stand, to regenerate an area of natural mortality, or to develop elk forage. However, uneven-aged methods would be chosen in most cases to meet the special multiple-use objectives of these strategies.

PONDEROSA PINE WORKING GROUP

Ponderosa Pine/A3, A4, A5, A7 (scenic and recreational), A10, C3, C4, C5, C6, C7 (nonriparian), F1 (>150' from streams), F4 (scheduled areas, as mapped), F5 (nonriparian zones)

The principal species on climax ponderosa pine sites are ponderosa pine and Douglas-fir (Hall 1973). Both *even-aged and uneven-aged management methods are feasible (Burns 1983). Timber harvest is scheduled* under the above management strategies to produce and maintain desired timber stands and other resource conditions in order to meet the special management and multiple-use objectives of the strategies. Specific multiple-use objectives would include natural to slightly altered landscapes, high elk habitat effectiveness index (HEI), high quality winter range forage, other wildlife habitat (snags, down logs, etc.), high quantity and quality water, and anadromous and resident fish habitat. Both even-aged and uneven-aged methods would be acceptable to meet the visual wildlife, fish, and water quality objectives.

Uneven-aged management would be the preferred method in the following situations: Areas free of western dwarf mistletoe; where uneven-aged stands exist, or can be maintained; and where the stand conditions created by uneven-aged management best achieve the resource objectives of the management strategy. Visual quality objectives could be met by uneven-aged harvest, or even-aged in treatment units from 3 to 5 acres. Optimum big game habitat is the amount and arrangement of cover and forage areas that result in maximum use of the area without deterioration and is applicable to both even-aged and uneven-aged methods (Thomas 1979). Even-aged management can produce forage areas on timbered sites and, by creating a desirable mosaic of forest and opening, can increase forage and HEI. Such forage areas are readily used by elk (Thomas 1979). Group selection uneven-aged management and even-aged methods increase the diversity of wildlife species by including all successional stages (Thomas 1979). Even-aged management generally provides enhanced seedling and sapling growth rates because of the lack of a suppressing overstory (Barrett 1979), and results in increased timber volumes. Even-aged or group selection methods allow reforestation with genetically improved stock. Stocking level control and regeneration objectives would dictate more frequent harvest entries with uneven-aged methods than with even-aged, but there would be less volume harvested at each entry. More frequent, lower volume entries would make uneven-aged methods less economical and practical, especially for cable yarding systems with higher move-in and set-up costs than ground-based systems. Even-aged harvests are more practical and economical (Barrett 1979, Burns 1983), and more adaptable to the use of prescribed fire for fuel reduction and control of undesirable competitive vegetation, which can also significantly increase livestock and wildlife forage (Burns 1983). Even-aged management is preferred to help minimize dwarf mistletoe and root rot (Hadfield 1984) and elytroderma disease. Uneven-aged management of ponderosa pine would require low stand densities to maintain reasonable individual-tree growth rates (Burns 1983). Low stand densities would help to protect the individual trees from bark beetle attack, but would reduce net stand growth increment.

Ponderosa Pine/ D1, E1, E2.

Timber harvest is scheduled under management strategies D1, E1, and E2 to produce wood fiber and forage, provided the Forest-wide Standards and Guidelines are met or exceeded for the management and protection of other resource values. Management objectives emphasize the production of high quantities of wood fiber and domestic livestock forage, and in the case of E2, a moderate level of quality big game habitat. Reforestation, establishment of trees and other desirable vegetation, and acceptable growth rates should be achieved. Under uneven-aged management, low stand densities would be required to maintain reasonable individual-tree growth rates (Burns 1983). Even-aged or group selection methods allow reforestation with genetically-improved stock. Even-aged methods generally increase forage production and species diversity and provide a desirable vegetative mosaic. Seedling and sapling growth rates are generally better in even-aged stands (Barrett 1979) and could result in increased timber volumes and more economical and practical harvests in terms of sale preparation, administration, harvest, and transportation (Barrett 1979, Burns 1983). Stocking level control and regeneration objectives would dictate more frequent harvest entries with uneven-aged methods than even-aged, with less volume harvested at each entry. More frequent, lower volume entries would make the uneven-aged methods less economical and practical, especially for cable yarding systems, which have higher move-in and set-up costs than ground-based methods. Uneven-aged management methods mimic the natural structure of ponderosa pine climax forests. Use of such methods serves to work with, not against, nature and takes advantage of naturally established advanced regeneration, thus reducing reforestation costs. Uneven-aged management in ponderosa pine types can favor the production of high quality, high value wood in the future. Uneven-aged methods are not appropriate where dwarf mistletoe, elytroderma disease, or root rots are present. With either method, prescribed fire could be used as a management tool to reduce fuel accumulations, control undesired vegetation, and significantly increase livestock and wildlife forage. The application of uneven-aged silviculture is preferred in management areas E1 and E2 in stands free of western dwarf-mistletoe. In the D1 management areas, even-aged silvicultural methods are preferred.

North Associated/ A3, A4, A5, A7 (scenic and recreational), A10, C3, C4, C5, C6, F1 (>150' from streams), F4 (scheduled, as mapped), and F5 (nonriparian).

Timber harvest in the above management strategies is scheduled to produce and maintain the desired resource conditions to meet the special management and multiple-use objectives of the area. The special management objectives include maintaining or creating a natural or near-natural appearing landscape (A3, A4, A5, and A7); high quality wildlife habitat (A10, C3, and C4); and high quantity and quality water and habitat for resident and/or anadromous fish in riparian areas and adjacent land (A7, C5, C6, F1, F4, and F5).

The North Associated Working Group includes grand fir/white fir, Douglas-fir, western larch, ponderosa pine, lodgepole pine, Engelmann spruce, subalpine fir, and western white pine. Plant communities included are the mixed conifer, lodgepole pine, white fir, and subalpine fir communities (Hall 1973).

Both even-aged and uneven-aged management methods can be used (Barrett 1979, Burns 1983). Single tree selection techniques can be used where healthy, uneven-aged stands exist and conversion to shade-tolerant species is not objectionable. Group selection can be used in essentially the same areas as even-aged management; however, economical and operational constraints may limit its use. Areas of high recreational or aesthetic value may be managed by uneven-aged methods or by even-aged ones in small scale units (3-5 acres).

Stand regeneration by even-aged applications can produce increased forage for wildlife and livestock and improved elk and deer habitat. Even-aged methods can increase horizontal diversity because edges are increased and all successional stages are represented. Elk in the Blue Mountains readily use clearcuts (Thomas 1979). Uneven-aged management tends to create more vertical diversity with some decrease in the amount and contrast of edges. Even-aged methods create the desired mosaic of forest and opening for big game species and generally increase the HEI over unmanaged forest conditions.

The mixed conifer and associated species stands of the North Associated Working Group are attacked by a large number of insects and diseases, especially defoliating insects, trunk and root rots, and dwarf mistletoes. Management of mixed species stands will be implemented to moderate and limit the forest pest problems associated with single species stands. Mixed species stands will also result in more complete site utilization and multiple wildlife and aesthetic benefits. Suppression of wildfire has resulted in a species conversion from fire-resistant and shade intolerant pioneer species such as ponderosa pine, western larch, and lodgepole pine to less fire-resistant but more shade tolerant spruce and firs. The species switch has resulted in the severe insect and disease problems found in this working group today. Even-aged management is preferred to help minimize dwarf mistletoe and root rot disease losses (Hadfield 1984). Uneven-aged methods, particularly single tree selection, discourage regeneration of the shade-intolerant species and tend to increase the proportion of the shade-tolerant and disease-susceptible species on the Forest. Periodic prescribed burning (as a management tool) in this Working Group is not easily adaptable to uneven-aged methods because the seedlings and saplings present would be killed, regardless of species.

Even-aged, or group selection uneven-aged methods are more appropriate for the development and maintenance of healthy, vigorous stands at stocking levels conducive to optimum growth rates and desirable species compositions. Even-aged methods are more appropriate for creating the desired mosaic of forest and openings for elk and deer habitat and providing species diversity, as all successional stages are represented (Thomas 1979). The application of uneven-aged silviculture would be difficult because information on growth, regeneration, stocking levels, and stand structure is lacking (Burns 1983). Even-aged methods are more practical and economical (Barrett 1979, Burns 1983). Stocking level control and regeneration objectives would dictate more frequent harvest entries with uneven-aged methods than with even-aged, but there would be less volume harvested at each entry. More frequent, lower-volume entries would make uneven-aged methods less economical and practical, especially for cable yarding systems with higher move-in and set-up costs than ground-based systems. Most of the strategies in the North Associated Working Group will likely use a mix of silvicultural harvest methods to accomplish their objectives, but even-aged practices will be the most common.

North Associated/D1, E1, E2

Timber harvest is scheduled under management strategies D1, E1, and E2 to produce wood fiber and forage, while meeting or exceeding Forest-wide Standards and Guidelines for management and protection of other resource values. Management objectives emphasize the production of high quantities of wood fiber and domestic livestock forage and, in the case of E2, a moderate level of quality big game habitat. While uneven-aged methods would be biologically feasible, even-aged management is more economical and would result in generally higher output levels (Barrett 1979, Burns 1983). Stocking level control and regeneration objectives would dictate more frequent harvest entries with uneven-aged methods than even-aged, with less volume harvested at each entry. More frequent, lower volume entries would make uneven-aged methods less economical and practical, especially for cable yarding systems with higher move-in and set-up costs than ground-based systems. Even-aged or group selection methods allow reforestation with genetically-improved stock. Seedling and sapling growth rate are higher with even-aged methods because of the lack of a suppressing overstory during all or most of the rotation, and increased timber volumes result (Barrett 1979).

The mixed conifer and associated species stands of the North Associated Working Group are attacked by a large number of insects and diseases, especially defoliating insects, trunk and root rots, and dwarf mistletoes. Management of mixed species stands will be implemented to moderate and limit the forest pest problems associated with single species stands. This will also result in more complete site utilization and multiple wildlife and aesthetic benefits. Suppression of wildfire has resulted in a species conversion from fire-resistant and shade intolerant pioneer species such as ponderosa pine, western larch, and lodgepole pine to less fire-resistant but more shade tolerant spruce and firs. The change in species has resulted in the severe insect and disease problems found in this working group today. Even-aged management is preferred to help minimize dwarf mistletoe and root rot disease losses (Hadfield 1984). Uneven-aged methods, particularly single tree selection, discourage regeneration of the shade-intolerant species and tend to increase the proportion of the shade-tolerant and disease-susceptible species in the Forest. Periodic prescribed burning as a management tool in this working group is not easily adaptable to uneven-aged methods because the seedlings and saplings present would be killed, regardless of species.

Even-aged or group selection uneven-aged methods are more appropriate for the development and maintenance of healthy, vigorous stands at stocking levels conducive to optimum growth rates and desirable species compositions. In stands where timber production is an important objective, the use of even-aged silviculture is recommended to convert overmature stands to vigorous young stands and to secure regeneration of shade-intolerant species (Burns 1983). Even-aged management is preferred to help minimize dwarf mistletoe and root rot disease losses (Hadfield 1984). Even-aged methods will usually be chosen for the North Associated Working Groups under management strategies D1, E1, and E2, although uneven-aged practices, particularly group selection, may be used in site-specific cases.

SOUTH ASSOCIATED WORKING GROUP

South Associated/ A3, A4, A5, A7 (scenic and recreational), A10, C3, C4, C5, C6, C7 (nonriparian), and F5 (nonriparian areas).

Timber harvest under three management strategies is scheduled to produce and maintain the desired resource conditions to meet the special management and multiple-use objectives of the strategy. The special management objectives include maintaining or creating a natural or near-natural appearing landscape (A3, A4, A5, and A7), high quality wildlife habitat (A10, C3, and C4), and high quantity and quality water and habitat for resident and/or anadromous fish in riparian areas and adjacent land (A7, C5, C6, C7, and F5).

The South Associated Working Group includes grand fir/white fir, Douglas-fir, western larch, ponderosa pine, lodgepole pine, Engelmann spruce, subalpine fir, and western white pine. Plant communities included are the mixed conifer, lodgepole pine, white fir, and subalpine fir communities (Hall 1973).

Both even-aged and uneven-aged management methods can be used (Barrett 1979, Burns 1983). Single tree selection techniques can be used where healthy, uneven-aged stands exist and conversion to shade-tolerant species is not objectionable. Group selection can be used in essentially the same areas as even-aged management; however economical and operational constraints may limit its use. Areas of high recreational or aesthetic value may be managed by uneven-aged methods or by even-aged ones in small scale units (3-5 acres).

Stand regeneration by even-aged and group selection applications can produce increased forage for wildlife and livestock, and improved elk and deer habitat. Even-aged methods can increase horizontal diversity because edges are increased and all successional stages are represented. Elk in the Blue Mountains readily use clearcuts (Thomas 1979). Uneven-aged management tends to create more vertical diversity with some decrease in the amount and contrast of edges. Even-aged systems create the desired mosaic of forest and opening for big game species and generally increase the HEI over unmanaged forest conditions.

The mixed conifer and associated species stands of the South Associated Working Group are attacked by a large number of insects and diseases, especially defoliating insects, trunk and root rots, and dwarf mistletoes. Management of mixed species stands will be implemented to moderate and limit the forest pest problems associated with single species stands. Mixed species stands will also result in more complete site utilization and multiple wildlife and aesthetic benefits. Suppression of wildfire has resulted in a species conversion from fire-resistant and shade intolerant pioneer species such as ponderosa pine, western larch and lodgepole pine, to less fire-resistant but more shade tolerant spruce and firs. The change in species has resulted in the severe insect and disease problems found in this working group today. Even-aged management is preferred to help minimize dwarf mistletoe and root rot disease losses (Hadfield 1984). Uneven-aged methods, particularly single tree selection, discourage regeneration of the shade-intolerant species and tend to increase the proportion of the shade-tolerant and disease-susceptible species on the Forest. Periodic prescribed burning (as a management tool) in this working group is not easily adaptable to uneven-aged methods because the seedlings and saplings present would be killed, regardless of species.

Even-aged or group selection uneven-aged methods are more appropriate for the development and maintenance of healthy, vigorous stands at stocking levels conducive to optimum growth rates and desirable species compositions. Even-aged methods are more practical and economical (Barrett 1979, Burns 1983). Even-aged methods are more appropriate for creating the desired mosaic of forest and openings for elk and deer habitat and providing species diversity as all successional stages are represented (Thomas 1979). The application of uneven-aged silviculture would be difficult because information on growth, regeneration, stocking levels, and stand structure is lacking (Burns 1983). Stocking level control and regeneration objectives would dictate more frequent harvest entries with uneven-aged methods than with even-aged, but there would be less volume harvested at each entry. More frequent, lower volume entries would make uneven-aged methods less economical and practical, especially for cable yarding systems with higher move-in and set-up costs than ground-based systems. Most of the strategies in the South Associated Working Group will likely use a mix of silvicultural harvest methods to accomplish their objectives, but even-aged practices will be the most common.

South Associated/D1, E1, E2

Timber harvest is scheduled under management strategies D1, E1, and E2 to produce wood fiber and forage, while meeting or exceeding Forest-wide Standards and Guidelines for management and protection of other resource values. Management objectives emphasize the production of high quantities of wood fiber and domestic livestock forage, and in the case of E2, a moderate level of quality big game habitat. While uneven-aged methods would be biologically feasible, even-aged management is more economical and would result in generally higher output levels (Barrett 1979, Burns 1983). Stocking level control and regeneration objectives would dictate more frequent harvest entries with uneven-aged methods than with even-aged, but there would be less volume harvested at each entry. More frequent, lower volume entries would make uneven-aged methods less economical and practical, especially for cable yarding systems with higher move-in and set-up costs than ground-based systems. Even-aged or group selection methods allow reforestation with genetically-improved stock. Seedling and sapling growth rates are higher with even-aged methods because of the lack of a suppressing overstory during all or most of the rotation, and increased timber volumes result (Barrett 1979).

The mixed conifer and associated species stands of the South Associated Working Group are attacked by a large number of insects and diseases, especially defoliating insects, trunk and root rots, and dwarf mistletoes. Management of mixed species stands will be implemented to moderate and limit the forest pest problems associated with single species stands. Mixed species stands will also result in fuller site utilization and multiple wildlife and aesthetic benefits. Suppression of wildfire has resulted in a species conversion from fire-resistant and shade-intolerant pioneer species such as ponderosa pine, western larch, and lodgepole pine, to less fire-resistant but more shade-tolerant spruce and firs. The change in species has resulted in the severe insect and disease problems found in this working group today. Even-aged management is preferred to help minimize dwarf mistletoe and root rot disease losses (Hadfield 1984). Uneven-aged methods, particularly single tree selection, discourage regeneration of the shade-intolerant species and tend to increase the proportion of the shade-tolerant and disease-susceptible species in the Forest. Periodic prescribed burning as a management tool is not easily adaptable to uneven-aged methods because the seedlings and saplings present would be killed, regardless of species.

Even-aged or group selection uneven-aged methods are more appropriate for the development and maintenance of healthy, vigorous stands at stocking levels conducive to optimum growth rates and desirable species compositions. In stands where timber production is an important objective, the use of even-aged silviculture is recommended to convert overmature stands to vigorous young stands and to secure regeneration of shade-intolerant species (Burns 1983). Even-aged management is preferred to help minimize dwarf mistletoe and root rot disease losses (Hadfield 1984). Even-aged methods will usually be chosen for the North Associated Working Groups under management strategies D1, E1, and E2, although uneven-aged practices, particularly group selection, may be used in site-specific cases.

LODGEPOLE PINE WORKING GROUP

Lodgepole Pine/A3, A4, A5, A7 (scenic and recreational), A10, C2, C3, C4, C5, C6, F1 (>150' from streams), F4 (scheduled as mapped), and F5 (nonriparian areas).

Timber harvest is scheduled under the above management strategies to produce and maintain desired resource conditions to meet management and multiple-use objectives. The special management objectives include maintaining or creating a natural or near-natural appearing landscape (A3, A4, A5, and A7), high quality wildlife habitat (C2, C3, C4, and A10), and high quantity and quality water and habitat for resident and/or anadromous fish in riparian areas and adjacent land (C5, C6, F1, F4, and F5). The Lodgepole Pine Working Group contains stands of lodgepole pine with minor components of western larch, Engelmann spruce, and others of the Associated or Ponderosa Pine Working Groups. Included are the lodgepole pine plant communities (Hall 1973).

Even-aged management with stocking level control for the first 60 years of the rotation will be used to develop old growth lodgepole pine stands under strategy C2. Stocking level control, achieved by thinnings, will be required to develop the desired 10-inch and larger tree diameters. Lodgepole pine is very shade intolerant and often stagnates in dense stands (Burns 1983). From 60 to 120 years, timber management activities or any forest product removal will be permitted only to maintain or enhance the old growth characteristics of the stand.

Both even-aged and uneven-aged management methods are possible, but even-aged is preferred and individual tree selection should not be used (Burns 1983). Uneven-aged methods can be used where management objectives include the combination of small openings in the forest, and mountain pine beetle and dwarf mistletoe problems are minimal (Burns 1983). Areas of high recreational or aesthetic value such as roadsides, may be managed by uneven-aged group selection (1-2 acres) or by even-aged ones in small-scale units (3-5 acres).

Quantity and quality of wildlife forage and browse are low to moderate in dense natural stands (Urness 1985). Openings created by clearcutting and group selection can greatly benefit big game if a balance between forage areas and cover areas is maintained (Burns 1983). Stand regeneration by even-aged applications can produce increased forage for wildlife and livestock, and improved elk and deer habitat. Even-aged methods can increase wildlife species diversity because all successional stages are represented (Thomas 1979). Even-aged methods create the desired mosaic of forest and opening and generally increase the HEI over unmanaged forest conditions.

Even-aged methods are recommended in areas where dwarf mistletoe or mountain pine beetle are management problems (Schmidt and Alexander 1985). Mistletoe spreads from residual stands into clearcuts at a very low rate (1 to 1.5 feet per year), and the mosaic of different age and size classes created reduces the probability of a large-scale beetle epidemic. Even-aged methods are more economical and practical (Barrett 1979, Burns 1983) and are more appropriate for the development and maintenance of healthy, vigorous stands at stocking levels conducive to optimum growth rates. Highest potential timber yields can be realized under even-aged management (Burns 1983). The application of uneven-aged silviculture would be difficult because information on growth, regeneration, stocking levels, and stand structure is lacking (Burns 1983). For the biological and silvicultural reasons stated, even-aged methods will usually be chosen for management strategies in the Lodgepole Pine Working Group.

Lodgepole Pine/D1, E1, and E2

Timber harvest is scheduled under management strategies D1, E1, and E2 to produce wood fiber and forage, while meeting or exceeding Forest-wide Standards and Guidelines for management and protection of other resource values Management objectives emphasize the production of high quantities of wood fiber and domestic livestock forage, and in the case of E2, moderate levels of quality big game habitat. While uneven-aged group selection systems would be biologically feasible, even-aged management is more economical and practical in terms of sale preparation, administration, harvest, and transportation (Barrett 1979, Burns 1983). Seedling and sapling growth rates are better because of the lack of a suppressing overstory, and increased timber volumes result (Barrett 1979). Burns (1983) states that the highest potential timber yields can be realized under even-aged management. Lodgepole pine is very shade intolerant and tends to stagnate in dense stands rather than naturally thin itself. Even-aged methods are preferred for regeneration, and individual tree selection is not recommended (Burns 1983). Even-aged management is recommended in areas where dwarf mistletoe or mountain pine beetle are management problems (Schmidt and Alexander 1985). Mistletoe spreads from residual stands into clearcuts at only 1 to 1.5 feet per year, and the created mosaic of different age and size classes reduces the probability of a large-scale beetle epidemic. Even-aged methods are more appropriate for creating the desired mosaic of forest and opening for elk and deer habitat, and are generally better for horizontal diversity as all successional stages are represented (Thomas 1979). When tree canopies are opened by logging, forage production, nutritional values, and diversity may increase substantially (Urness 1985). Because of the silvicultural characteristics of lodgepole pine, the biology of its important insect and disease pests, and economic considerations, even-aged management will usually be chosen for the species under management strategies D1, E1, and E2.

REFERENCES

Barrett, J. W. Silviculture of Ponderosa Pine in the Pacific Northwest: The State of Our Knowledge. Gen. Tech. Rep. PNW-92. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station; 1979. 106 p.

Burns, R. M., tech. comp. Silvicultural systems for the major forest types of the United States. Agric. Handb. 445. Washington, DC: U.S. Department of Agriculture; 1983.

Hadfield, James S. Root disease problems and opportunities in the interior Douglas-fir and grand fir forest types. In: Silvicultural management strategies for pests of the interior Douglas-fir and grand fir forest types: Proceedings of a symposium; 1984 February 14-16; Spokane. Pullman, WA: Washington State University, Cooperative Extension; 1984: 59-66.

Hall, Frederick C. Plant communities of the Blue Mountains in eastern Oregon and southeastern Washington. R6 Area Guide 3-1. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region; 1973. 62 p.

Schmidt, W. C.; Alexander, R. R. Strategies for Managing Lodgepole Pine. In: Proceedings, lodgepole pine: The species and its management. Baumgartner, D.M., Ed. Pullman, WA: Cooperative Extension, Washington State University; 1985: 201-210.

Seidel, K.W.; Cochran, P. H. Silviculture of mixed conifer forests in eastern Oregon and Washington. Gen. Tech. Rep. PNW-121. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station; 1981.

Thomas, Jack W., et.al. Wildlife Habitats in Managed Forests: the Blue Mountains of Oregon and Washington. Agric. Handb. 553. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station; 1979. 512 p.

U.S. Department of Agriculture, Forest Service. Regional Guide for the Pacific Northwest Region - Final Environmental Impact Statement. [Place of publication unknown]: U.S. Department of Agriculture, Pacific Northwest Region; 1984 May.

U.S. Laws, Statutes, etc.; Federal Register, 36 CFR 219. National forest system land and resource management planning. Act of July 1, 1982. 29 p.

Urness, P. J. Managing lodgepole pine ecosystems for game and range values. In: Proceedings, lodgepole pine: The species and its management. Baumgartner, D.M., Ed. Pullman, Washington: Cooperative Extension, Washington State University, 1985: 297-304.

APPENDIX L

APPENDIX L

R-6 SENSITIVE PLANT SPECIES WITH DOCUMENTED SIGHTINGS ON THE UMATILLA NATIONAL FOREST

TABLE OF CONTENTS

Page

Introduction L-1

Table L-1 Sensitive Plant Species Occurring on the Forest L-2

Allium campanulatum (Sierra Onion) L-2

Allium dictuon (Blue Mountain Onion) L-2

Allium madidum (Swamp Onion) L-2

Allium tolmiei var. *platyphyllum* (Flat-leaved Onion) L-2

Aster sibiricus var. *meritus* (Arctic Aster) L-2

Astragalus arthuri (Arthur's Milkvetch) L-2

Astragalus diaphanus var. *diaphanus* (Transparent Milkvetch) L-2

Botrychium lunaria (Moonwort Grape-fern) L-2

Carex limnophila (Pond Sedge) L-2

Cirsium utahense (Utah Thistle) L-3

Dryopteris filix-mas (Male Fern) L-3

Lupinus sabinii (Sabin's Lupine) L-4

Lycopodium annotinum (Stiff Clubmoss) L-4

Mimulus clivicola (Bank Monkey-flower) L-4

Mimulus washingtonensis (Washington Monkey-flower) L-4

Physaria didymocarpa var. *didymocarpa* (Common Twinpod) L-4

Ranunculus oresterus (Blue Mountain Buttercup) L-4

Ribes cognatum (Umatilla Gooseberry) L-5

Ribes wolfii (Wenaha Currant) L-5

Silene scaposa var. *scaposa* (Scapose Catchfly) L-5

Spiraea densiflora var. *splendens* (Subalpine Spiraea) L-5

Table L-2 Sensitive Plant Species Occurring Adjacent to the Forest L-6

APPENDIX L

R-6 SENSITIVE PLANT SPECIES WITH DOCUMENTED SIGHTINGS ON THE UMATILLA NATIONAL FOREST

INTRODUCTION

This appendix lists the Pacific Northwest Region's threatened, endangered, and sensitive (T/E/S) plant species having documented or reported sightings on the Umatilla National Forest (Table L-1) and on lands adjacent to the Forest (Table L-2). The Regional list is titled the "R-6 Sensitive Plant List," for short. The R-6 list is a combination of the Washington and Oregon State lists, but the status of species listed in each state is still considered separately. (For example, in Table L-1, the range is given only for the portion of the Forest that is in the state in which the plant is listed.)

The State and Regional T/E/S lists are local and not to be confused with the Federal Threatened and Endangered Species list. A species that is threatened in Oregon or Washington may be abundant elsewhere in the U.S. and so is not federally listed. Only a few R-6 species appear on the Federal list, and none of those is known to occur on the Umatilla National Forest. The intent of the Forest is to insure the plants' continuance (through special management) so they may never need such designation. The lists are continuously updated, and any change in a T/E/S plant's status on the Forest will be reflected in future management.

A detailed summary of information collected on the Forest's T/E/S plant species is presented in Table L-1. In the table, "Status" is based on a classification reviewed annually and determined by the Regional Office, the Oregon Natural Heritage Database program, and the Washington State Natural Heritage program. As presented, "Status" is current to the March 1989 listing. Plant populations in the "Status" column are derived from documented sightings through December 1988. Entries in the "Threats" column are based on the T/E/S examiner's hypothetical predictions and should not be construed to be impacting activities in progress. "Habitat" summarizes the generalized microenvironments in which the given species is known to occur. "Range" entries were compiled from geographic names entered on documented and reported sighting forms from 1978 through 1988. "Range" provides a guide to the known distribution of the T/E/S species on the Forest through December 1988. "Plant Commmunity Type" entries are based on specific plant communities given in *Plant Communities of the Blue Mountains in Eastern Oregon and Southeastern Washington.* This column provides information on the dominant plant species surrounding the documented or reported T/E/S species, and is a valuable guide to predicting occurrence of T/E/S plant species.

DEFINITIONS

Endangered Species – Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act.

Threatened Species – A plant or wildlife species officially designated by the U.S. Fish and Wildlife Service as having its existence threatened in a localized area, such as state or province or lesser area, because its habitat is threatened with destruction, drastic modification, or severe curtailment or because of over-exploitation, disease, predation, or other factors.

Sensitive Species – A plant or animal species that has appeared in the Federal Register as proposed for classification and official listing as an endangered or threatened species, that is on an official state list, or that is recognized by the Regional Forester as needing special management to prevent its being placed on Federal or State lists.

TABLE L-1

REGION 6 SENSITIVE PLANT SPECIES WITH DOCUMENTED SIGHTINGS ON THE UMATILLA NATIONAL FOREST

	Scientific Name (Common Name)	Status **	Threats	Habitat	Range	Roadless Area	Plant Community Type
1.	*Allium campanulatum* S. Wats. (Sierra Onion)	OR – Threatened 8 Plants	Road construction, gravel	Xeric sites, shallow soil, forest openings at upper elevations	Tower Mountain	N/A	GB-49-11 Bunchgrass on shallow soil, gentle slopes
2.	*Allium dictuon* St. John (Blue Mountain Onion)	WA – Threatened	Any disturbance to extremely localized habitat	Various aspects, 0-55% slope, shallow soil, steep open rock slopes	Weller Butte	Wenaha-Tucannon Wilderness	GB-49-13, GB-49-14, Bunchgrass on steep slopes
3	*Allium madidum* S. Wats (Swamp Onion)	OR – Limited but stable	Unknown	Sandy, rocky soil in meadow	Bear Wallow Creek Rock Spring	N/A	Not recorded
4.	*Allium tolmiei* Baker ex Wats. var *platyphyllum* (Tidestrom) Ownbey (Flat-leaved Onion)	OR – Limited but stable	Unknown	Open grassland, shallow rocky sites, often on a southern exposed ridge	Phillips Creek Mud Spring Swale Creek Frazier Meadows Sulphur Spring S. Fork Cable Creek	N/A	GB-91-11 Bluegrass scabland GB-49-11 Bunchgrass on shallow soil
5.	*Aster sibincus* L. var meritus (A Nels) Raup (Arctic Aster)	WA – Sensitive	Unknown	Open rocky areas at high elevations	Godman Campground	N/A	Rock outcrops
6.	Astragalus arthuri M. E. Jones (Arthur's Milkvetch)	WA – Sensitive	Agriculture, grazing, herbicides	Dry, grassy hills and stony meadows, on basalt	Cottonwood Spring	N/A	GB-91-11 Bluegrass scabland GB-49-11,12,13,14 Bunchgrass
7	*Astragalus diaphanus* var. diaphanus Dougl. (Transparent Milkvetch)	OR – Endangered WA – Endangered 28 Plants	Unknown	Dry, gravelly sites in seasonally-moist canyon bottoms	Big Willow Creek Camp Moreland	N/A	CB-49-13 Bunchgrass on shallow soil, steep slopes
8.	*Botrychium lunaria* (L.) Swartz (Moonwort Grape-fern)	OR –Threatened WA – Sensitive 27 Plants	Logging, road construction	Dry edges of soggy openings in spruce and larch stands	Meadow Brook Creek Rabbit Creek Lost Creek	N/A	CE-53-11 Subalpine Fir – Big Huckleberry

TABLE L-1 (Continued)

	Scientific Name (Common Name)	Status **	Threats	Habitat	Range	Roadless Area	Plant Community Type
13.	*Lycopodium annotinum* L. (Stiff Clubmoss)	OR – Threatened	Logging	Associated species forest	Battle Creek	N/A	CW-S2-11 White fir– big huckleberry; CW-S8-11 White fir– grouse huckleberry
14	*Mimulus clivicola* Greenm (Bank Monkey-flower)	OR – Threatened	Grazing, quarrying, road building, herbicides, logging	Moist banks and cliffs to moderately dry slopes in foothills and valleys	Round Butte (Wenaha Breaks)	N/A	GB-91-11 *Bluegrass scabland*, GB-49-12,13,14 Bunchgrass
15	*Mimulus washingtonensis* Gand (Washington Monkey-flower)	WA – Sensitive OR – Threatened 2,440 Plants	Damming, grazing, trampling, mowing, logging	Wet open places on xeric slopes, low elevations	Oregon Butte Jarboe Creek Grande Ronde Big Wall Creek Tamarack Creek Little Tamarack Butte	Jaussaud Corral Grande Ronde Wenaha-Tucannon Wilderness	MM, MW Moist or wet meadows
16.	*Physaria didymocarpa* (Hook) Gray var *didymocarpa* (Common Twinpod)	WA – Sensitive	Logging, mining	Open rocky areas, and talus slopes in the mountains	Oregon Butte	Wenaha-Tucannon Wilderness	Not recorded
17	*Ranunculus oresterus* Benson (Blue Mountain Buttercup)	OR – Endangered	Unknown	Moist areas of valleys and meadows	Olive Lake	N/A	MM, MW Moist to wet meadows
18.	*Ribes cognatum* Greene (Umatilla Gooseberry)	WA – Sensitive	Grazing, logging, agriculture, herbicides, road building	Along streambanks, ephemeral streams, and adjacent moist hillsides to mid-elevations	Tucannon River	N/A	Not recorded

TABLE L-1 (Continued)

	Scientific Name (Common Name)	Status **	Threats	Habitat	Range	Roadless Area	Plant Community Type
13.	*Lycopodium annotinum* L. (Stiff Clubmoss)	OR – Threatened	Logging	Associated species forest	Battle Creek	N/A	CW-S2-11 White fir– big huckleberry; CW-S8-11 White fir– grouse huckleberry
14.	*Mimulus clivicola* Greenm. (Bank Monkey-flower)	OR – Threatened	Grazing, quarrying, road building, herbicides, logging	Moist banks and cliffs to moderately dry slopes in foothills and valleys	Round Butte (Wenaha Breaks)	N/A	GB-91-11 Bluegrass scabland; GB-49-12,13,14 Bunchgrass
15.	*Mimulus washingtonensis* Gand (Washington Monkey-flower)	WA – Sensitive OR – Threatened 2,440 Plants	Damming, grazing, trampling, mowing, logging	Wet open places on xeric slopes, low elevations	Oregon Butte Jarboe Creek Grande Ronde Big Wall Creek Tamarack Creek Little Tamarack Butte	Jaussaud Corral Grande Ronde Wenaha-Tucannon Wilderness	MM, MW Moist or wet meadows
16.	*Physaria didymocarpa* (Hook.) Gray var *didymocarpa* (Common Twinpod)	WA – Sensitive	Logging, mining	Open rocky areas, and talus slopes in the mountains	Oregon Butte	Wenaha-Tucannon Wilderness	Not recorded
17.	*Ranunculus oresterus* Benson (Blue Mountain Buttercup)	OR – Endangered	Unknown	Moist areas of valleys and meadows	Olive Lake	N/A	MM, MW Moist to wet meadows
18.	*Ribes cognatum* Greene (Umatilla Gooseberry)	WA – Sensitive	Grazing, logging, agriculture, herbicides, road building	Along streambanks, ephemeral streams, and adjacent moist hillsides to mid-elevations	Tucannon River	N/A	Not recorded

TABLE L-1 (Continued)

	Scientific Name (Common Name)	Status **	Threats	Habitat	Range	Roadless Area	Plant Community Type
19.	*Ribes wolfii* Rothr. (Wenaha Currant)	WA – Sensitive 3,379 Plants	Logging, herbicides, possibly grazing	Open forests at mid-elevations	Charley Creek Teal Spring Sunset Point Devil's Tailbone Ridge Indian Tom Corral	Upper Tucannon Asotin Creek	CW-F3-11 White fir–twinflower-forb; CW-G1-11 Mixed conifer–pinegrass, CE-S3-11 Subalpine fir–huckleberry; CD-S7-11 Ponderosa pine–Douglas-fir–ninebark
20.	*Silene scaposa* Robins. var. scaposa (Scapose Catchfly)	OR – Sensitive 2 Plants	Logging, grazing	Open PP, juniper and sagebrush areas at low to mid-elevations	North Fork John Day–Horse Canyon	N/A	SD–Sagebrush CP–Ponderosa pine CJ–Juniper
21.	*Spiraea densiflora* Nutt. var. *splendens* (Baumann) C L. Hitchc. (Subalpine Spiraea)	WA – Sensitive 178 Plants	Logging	Moist areas on open slopes at higher elevations	Deadman Peak Blakely Spring Kendall Cairn Table Rock	Mill Creek Watershed	Not recorded

[1] An Illustrated Guide to the Endangered, Threatened, and Sensitive Vascular Plants of Washington, 1981
[2] Oregon Natural Heritage Data Base – Sensitive Plant Localities, 2/24/88
[3] Rare, Threatened, and Endangered Plants of the Umatilla National Forest 1981
[4] Threatened & Endangered Vascular Plants of Oregon: An Illustrated Guide
[5] List of plants taken from Region 6 Sensitive Plant List (revised February 1988)
[6] Karl Urban
[7] Billy Snow
[8] Washington Natural Heritage Program, March 1988.
[9] Plant Communities of the Blue Mountains in Eastern Oregon and Southeastern Washington, 9/73
[10] Washington Natural Heritage Program – Endangered, Threatened, and Sensitive Vascular Plants of Washington, June 1987
[11] Oregon Natural Heritage Data Base – Rare, Threatened and Endangered Plants and Animals of Oregon, March 1985
[12] Oregon Natural Heritage Program, 2/24/88
** Plant totals current as of 12/31/88

TABLE L-2

SENSITIVE PLANT SPECIES OCCURRING ON LANDS ADJACENT TO THE FOREST

Umatilla National Forest

The following Sensitive Plant species have been found (or are suspected to occur) on lands *adjacent* to the Forest, so they *may* occur on the Forest:

Allium brandegei S. Wats.	Brandegee Onion
Astragalus cusickii Gray var. *cusickii*	Cusick's Milkvetch
Betula papyrifera Marsh. var. *commutata* (Regel.) Fern.	Paper Birch
Bolandra oregana S. Wats.	Oregon Bolandra
Bupleurum americanum Coult. & Rose	Bupleurum
Calochortus nitidus Dougl.	Broadfruit Mariposa
Collomia macrocalyx Leib. ex Brand.	Bristle-flowered Collomia
Geum rossii (R. Br.) Ser. in DC. var. *turbinatum* Rydb.) C.L. Hitchc.	Slender-stemmed Avens
Haplopappus liatriformis (Greene) St. John	Palouse Goldenweed
Lomatium cusickii (S. Wats.) Coult. & Rose	Cusick's Lomatium
Lomatium "pastoralis" Wagner, in ed.	Meadow Lomatium
Lomatium salmoniflorum (Coult. & Rose) Math & Const.	Salmon-flowered Lomatium
Lomatium serpentinum (M.E. Jones) Math.	Snake Canyon Desert-parsley
Lupinus biddlei Hend. ex C.P. Smith	Biddle's Lupine
Lupinus cusickii S. Wats (SYN: *Lupinus lepidus* var. *cusickii*)	Cusick's Lupine
Mimulus jungermannioides Suksd.	Hepatic Monkey-flower
Penstemon spatulatus Pennell	Wallowa Penstemon
Phlox multiflora A. Nels.	Many-flowered Phlox
Platanthera orbiculata (Pursh) Lindl. (SYN: *Habenaria orbiculata*)	Large Round-leaved Bog-orchid
Polystichum lemmonii Underw.	Shasta Fern
Ribes cereum Dougl. var. *colubrinum* C.L. Hitchc.	Snake River Squaw Currant
Rubus nigerrimus (Greene) Rydb.	Northwest Raspberry
Silene spaldingii S. Wats.	Spalding's Campion
Thelypodium eucosmum Robins.	Arrow-leaf Thelypody

APPENDIX M

APPENDIX M

MANAGEMENT REQUIREMENTS

TABLE OF CONTENTS

	Page
INTRODUCTION	M-1
BACKGROUND OF MANAGEMENT REQUIREMENTS (MR'S)	M-1
WHAT ARE MANAGEMENT REQUIREMENTS	M-1
LEGAL REQUIREMENTS VERSUS IMPLEMENTATION METHODS	M-2
HOW IMPLEMENTATION METHODS ARE DEVELOPED TO MEET THE MR'S	M-2
IMPLEMENTATION METHODS AND OPPORTUNITY COSTS	M-4
WATER QUALITY MANAGEMENT REQUIREMENTS	M-5
SOURCE OF THE WATER QUALITY MR'S	M-5
SPECIFICATIONS FOR THE WATER QUALITY MR'S	M-5
ALTERNATIVE WAYS OF MEETING THE MR'S FOR WATER QUALITY	M-6
EVALUATION OF IMPLEMENTATION METHODS USED TO MEET WATER QUALITY MR'S	M-6
OPPORTUNITY COSTS	M-6
CONSEQUENCES OF ALTERNATIVE MEANS OF MEETING WATER QUALITY	M-7
RATIONALE FOR THE SELECTED IMPLEMENTATION MEANS	M-7
IMPLICATIONS FOR THE FEIS ALTERNATIVES AND FOREST PLAN	M-7
ROLE OF MONITORING AND RESEARCH	M-7
MANAGEMENT REQUIREMENT FOR VIABLE POPULATIONS OF EXISTING NATIVE VERTEBRATE SPECIES	M-7
SOURCE OF THE MR	M-7
DESCRIPTION OF THE MR	M-8
HABITAT NEEDS	M-8
SPECIFICATIONS FOR MEETING HABITAT REQUIREMENTS FOR THE FOREST INDICATOR SPECIES	M-9
PILEATED WOODPECKER SPECIFICATIONS	M-10
PINE MARTEN SPECIFICATIONS	M-11
NORTHERN THREE-TOED WOODPECKER SPECIFICATIONS	M-12
ALTERNATIVE WAYS CONSIDERED FOR MEETING THE MANAGEMENT REQUIREMENT	M-13
ANALYSIS OF OPPORTUNITY COSTS	M-14
CONSEQUENCES OF THE DIFFERENT WAYS OF MEETING THE MR'S	M-14
RATIONALE FOR THE SELECTED METHOD	M-14
IMPLICATIONS FOR FEIS ALTERNATIVES AND FOREST PLAN	M-15
ROLE OF MONITORING AND RESEARCH	M-15
REFERENCES	M-17

LIST OF TABLES

TABLE M-1	SUMMARY OF MANAGEMENT REQUIREMENTS AND ASSOCIATED SPECIES	M-3
TABLE M-2	SUMMARY OF ALTERNATIVE MEANS CONSIDERED FOR IMPLEMENTING EACH MANAGEMENT REQUIREMENT	M-4
TABLE M-3	OPPORTUNITY COST OF MEETING MR'S WITH SELECTED IMPLEMENTATION	M-4
TABLE M-4	OPPORTUNITY COST ASSOCIATED WITH ALTERNATIVE MEANS FOR MEETING WATER QUALITY MR'S	M-6
TABLE M-5	SPECIES MATRIX FOR ADDRESSING MR'S FOR WILDLIFE AND THREATENED AND ENDANGERED SPECIES	M-8
TABLE M-6	PILEATED WOODPECKER HABITAT REQUIREMENTS (ZONE IV)	M-10
TABLE M-7	PINE MARTEN HABITAT REQUIREMENTS (ZONE IV)	M-12
TABLE M-8	NORTHERN THREE-TOED WOODPECKER REQUIREMENTS (ZONE IV)	M-12
TABLE M-9	MATURE HABITAT CONIFER TYPES	M-13
TABLE M-10	OPPORTUNITY COST OF ALTERNATIVE WAYS OF MEETING THE MATURE CONIFER MANAGEMENT REQUIREMENT	M-14
TABLE M-11	SUMMARY OF OLD GROWTH TREE HABITAT USED IN ALTERNATIVE	M-15

APPENDIX M

INTRODUCTION

This appendix is included in the Final Environmental Impact Statement for the Forest Plan in response to decisions made by the Chief of the Forest Service and the Deputy Assistant Secretary of Agriculture regarding appeal No. 1770, brought by the Northwest Forest Resource Council on September 18, 1986. The appeal centered on direction from the Regional Forester to incorporate "management requirements" (MR's) in Forest Plan alternatives. The appellant requested that the appropriateness of the MR's be examined through the environmental impact statement process The information in this appendix also responds to comments made about Management Requirements during the review of the Draft Environmental Impact Statement (DEIS).

A summary of Management Requirements is provided in Chapter II, "Management Requirements" section. Additional information is in Appendix B, under "Development of Management Requirements." The Standards and Guidelines (or specifications) for implementation of the MR's are found in Appendix D and in the Forest Plan, Chapter 4.

This appendix addresses the issue raised by the appellant: For those MR's which cause significant reductions in allowable sale quantity (ASQ) or present net value (PNV), alternate ways of meeting the MR's should be examined and their opportunity costs (reductions in ASQ and PNV) should also be compared

Appendix M of the DEIS, "Sensitivity Analysis for Minimum Management Requirements," has been completely replaced by the material presented here Appendix M of the DEIS is part of the planning record.

BACKGROUND OF MANAGEMENT REQUIREMENTS

WHAT ARE MANAGEMENT REQUIREMENTS?

The National Forest Management Act of 1976 (NFMA), and its implementing regulations, provides direction for the forest planning process. The direction for National Forest System Land and Resource Management Planning, at Title 36 of the Code of Federal Regulations, Part 219 [36 CFR 219] specifies: (1) The minimum specific management requirements to be met in accomplishing the goals and objectives of the National Forest System [36 CFR 219.27]; and (2) the minimum requirements for integrating individual forest resource planning into the Forest Plan [36 CFR 219.14 through 219.26]. The term "management requirements" (MR's) will be used in this appendix to refer to these NFMA regulations instead of "minimum management requirements" (MMR's) which were used in the DEIS and draft Forest Plan.

The Forest must also comply with minimum requirements of numerous other applicable laws and regulations. The evaluations of potentials to produce resources and resolve issues, therefore, must realistically reflect the legal, nondiscretionary mandates that the Forest Service must meet in implementing Forest Plans. However, some MR's are procedural in nature and need not be dealt with in the appendix. Other requirements were analyzed and were available for review during the Regional Guide environmental impact statement process and are also not dealt with here.

In the analysis of management requirements the Forest considered four requirements because of their applicability to the Forest, and their significant effects on management of forest resources The Forest has discretion in the methods used to meet them. The requirements are as follows:

- Wildlife: Provide wildlife habitat sufficient to maintain viable populations of all vertebrate species.
- Riparian Areas: Use management practices that will not result in detrimental changes to water conditions or fish habitat.
- Soil and Water: All streams must meet state water quality standards.
- Timber Harvest Dispersion: Timber harvest will be dispersed to meet harvest requirements, state water quality standards, and avoid any permanent impairment of productivity of the land.

LEGAL REQUIREMENTS VERSUS IMPLEMENTATION METHODS

The NFMA management requirements and implementing regulations are legal requirements. They represent "ends" which must be met during forest plan implementation. For example, the NFMA implementing regulations require that "fish and wildlife habitat shall be managed to maintain viable populations of existing and desired non-native vertebrate species in the planning area." It is mandatory that the MR be met whatever implementation methods are chosen.

Specifications and standards for achievement of most of the MR's are established either at the national level or through regional analysis. These are listed in the regulations or as Standards and Guidelines in the Regional Guide. Additional specifications identified on the Forest are listed as Standards and Guidelines in the FEIS, Appendix D, and the Land and Resource Management Plan, Chapter 4. In addition, the specifications must be based on knowledge of the resources involved. For example, in meeting the MR for viable populations of vertebrate species, it is necessary to define the type of habitat required by the species, the maximum distance between habitats which will still provide reasonable assurance of genetic interaction, and the size of habitat area needed to support a breeding pair.

Often, the pool of scientific knowledge is insufficient to provide the entire basis for defining the specific conditions or standards that will satisfy or meet a MR. When this happens it is necessary to rely on the field experience and the judgment of knowledgeable professionals and establish monitoring and research that will provide better information for future planning efforts.

Implementation methods are the "means" or "ways" in which the MR's will be met. Usually more than one option is available in which a MR can be met. Determining the most appropriate means of meeting the specifications for each MR involves careful analysis at the Forest level. Considering and analyzing different methods of meeting a specific MR are particularly important if potentially significant reductions in present net worth (PNV) or allowable sale quantity (ASQ) are involved (see criteria below).

HOW IMPLEMENTATION METHODS ARE DEVELOPED TO MEET THE MR'S

The selection of means sufficient to meet MR's is based on effectiveness in meeting resource protection and on minimizing reductions to PNV or ASQ. The general process used in evaluating alternative ways of meeting the management requirements is as follows:

- Identify the desired "end" for each management requirement
- Assemble existing information about the resources addressed by the management requirement.
- Analyze the existing information to determine what conditions or specifications need to exist on the ground to assure meeting the "ends" of the MR (see Table M-1).
- Develop various ways and means of meeting the management requirement (see Table M-2).
- Evaluate how effectively the various means meet the management requirements. Estimate the environmental effects of each set of means.
- For each set of means, estimate the effects on economic efficiency (as measured by changes in present net value) and the effects on timber availability (as measured by allowable sale quantity).
- Where opportunity costs of meeting a management requirement exceed 2 percent of PNV or ASQ at the present net value benchmark, the analysis used to select the means is presented. Two percent is used because differences smaller than 2 percent would not be significant in terms of opportunity costs of alternative means. A higher threshold would preclude evaluation of many alternatives.

For discussion purposes, opportunity costs are reductions in present net value (PNV) and allowable sale quantity (ASQ) that result from implementing resource protection measures aimed at meeting the MR's set forth in NFMA regulations. The MR's which have not been fully dealt with elsewhere, and which require additional analysis due to significant opportunity costs associated with their implementation are:

- Maintenance of habitat to assure viable populations of fish and wildlife populations, particularly mature and old growth habitat, and

– Protection of water resources, particularly water temperatures and riparian areas.

In order to provide protection for water quality and wildlife habitat on the Forest, some opportunities to maximize present net value and timber production must be foregone. These management requirements are described in greater detail in later sections of this appendix.

Management Requirements for (1) Dispersal of created openings, (2) other wildlife habitats including dead tree habitat, and (3) wildlife habitats for threatened, endangered, and sensitive species, and (4) other requirements noted in 36 CFR 219.27 which have not been addressed in other environmental impact statements, do not incur significant opportunity costs when implemented. They are not addressed further in this analysis. FEIS Appendix B also contains information on the dispersion and other MR analyses. Also, see DEIS Appendix M, Procedures Used in Sensitivity Analyses, for additional details.

As noted in Table M-3, the opportunity costs of meeting water quality standards is less than 2 percent for ASQ and actually is positive for PNV (due to increased value of anadromous fisheries offsetting reduced timber harvests). The management requirement is retained for additional discussion and analysis since the means for addressing the water quality issue encompass a host of other issues and concerns beside timber (riparian, big game, and fish management). Implementation methods selected to meet water quality MR's provide fish habitat in streams and riparian habitat adjacent to streams to assure the maintenance of viable populations of species dependent on these habitats. Alternative implementation methods for meeting water quality MR's will also meet fish habitat and riparian habitat requirements. No additional discussion or analysis is displayed in Appendix M for these MR's.

Table M-1 summarizes each of the MR's (ends) subject to analysis of opportunity costs on the Forest and the specifications or standards of achievement for those ends. Table M-2 shows the various means considered for implementing each MR where the opportunity costs exceeded the 2 percent criteria or decision to describe in more detail.

TABLE M-1
SUMMARY OF MANAGEMENT REQUIREMENTS AND ASSOCIATED SPECIFICATIONS
Umatilla National Forest

Ends	Summary of Specifications
Protect water quality	Meet state water quality standards
Provide habitat that maintains viable populations of existing native and desired non-native vertebrate species.	
– Pileated woodpecker, pine marten, and northern three-toed woodpecker	Maintain mature/old growth conifer stands (for nesting and feeding) of adequate size and distribution to permit interaction among breeding pairs of dependent species [see Tables M-6 and M-7].

TABLE M-2
SUMMARY OF ALTERNATIVE MEANS CONSIDERED FOR IMPLEMENTING EACH MANAGEMENT REQUIREMENT
Umatilla National Forest

Management Requirements	Alternative Means
Protect streams and streambanks.	Set-aside streamside vegetation (no scheduled timber harvest) Selective harvest of streamside vegetation (scheduled timber harvest)
Provide for adequate habitat to maintain viable populations of existing native and desired non-native vertebrate species.	
— Pileated woodpecker, pine marten	Dedicate mixed conifer habitat sites with no timber harvest Manage habitat sites on 160-year rotations
— Northern three-toed woodpecker	Dedicate lodgepole habitat sites with no timber harvest Manage habitat sites on 80- to 100-year rotations

IMPLEMENTATION METHODS AND OPPORTUNITY COSTS

In analyzing the effects of the alternative means of meeting the MR's, with respect to present net value (PNV) and allowable sale quantity (ASQ), FORPLAN runs were made with and without constraints designed to simulate meeting the MR. The PNV benchmark (BM 3) without MR's was used for this analysis. This benchmark is a FORPLAN run which identifies the mix of management activities which would result in the highest level of economic efficiency (i.e., the highest PNV) in managing the Forests resources. It also identifies the ASQ associated with the most economically-efficient mix of management activities.

A benchmark was chosen to use in the with-and-without-constraint comparison, rather than an issue-based Forest Plan alternative, because management practices necessary to meet other objectives of the issue-based alternatives may partially or fully meet the MR, thus clouding any analysis of opportunity costs induced by the MR. The true effect when measured against a fully developed alternative is generally less because the objectives of that alternative may satisfy the MR's to a large extent

Table M-3 displays the opportunity costs of the implementation measures selected for meeting MR's on the Umatilla National Forest. Only implementation measures with significant opportunity costs are shown· Water quality and mature/old growth tree habitat (for pileated woodpecker, pine marten, and northern three-toed woodpecker).

TABLE M-3
OPPORTUNITY COST OF MEETING THE MR'S WITH THE SELECTED IMPLEMENTATION[1]
Umatilla National Forest

Selected Implementation Method	First Decade ASQ MMCF/Year (MMBF/Year)	Change in ASQ [2] Percent	PNV MM $	Change in PNV Percent
PNV benchmark with no protection measures	38.1 (213)	—	1,532 0	—
	OPPORTUNITY COST — APPROXIMATE CHANGE			
Opportunity cost of water quality	0 5 (2 7)	1 3%	+4 0	+0 3%
Opportunity cost of dedicated mature/old growth habitat for pileated woodpecker, pine marten, and northern three-toed woodpecker	2 4 (13 7)	6%	24 0	1 6%

[1] All data are from DEIS FORPLAN runs
[2] Percent change calculated on cubic foot basis

WATER QUALITY MANAGEMENT REQUIREMENTS

SOURCE OF THE WATER QUALITY MANAGEMENT REQUIREMENTS

Management requirements for water quality are based on NFMA which states: "Forest planning shall provide for compliance with requirements of the Clean Water Act, the Safe Drinking Water Act, and all substantive and procedural requirements of Federal, State, and local governmental bodies with respect to the provision of public water systems and the disposal of waste water" [36 CFR 219.23(d)]

Special attention shall be given to land and vegetation for approximately 100 feet from the edges of all perennial streams, lakes, and other bodies of water. This area shall correspond to at least the recognizable area dominated by the riparian vegetation. No management practices causing detrimental changes in water temperature or chemical composition, blockages of water courses, or deposits of sediment shall be permitted within these areas which seriously and adversely affect water conditions or fish habitat [36 CFR 219.27 (e)].

The Clean Water Act seeks to control nonpoint sources of water pollution To comply with Section 208 of the Act, Forest Service Region 6, the states of Oregon and Washington (which manage implementation of the Act), and the Environmental Protection Agency agreed on a process whereby each state reviews Forest Service management practices to determine if they meet or exceed state water quality standards Practices that are judged to meet or exceed the standards are certified as Best Management Practices (BMP's) which the Forest Service then agrees to continue. This process is described in more detail in FEIS Appendix E.

SPECIFICATIONS FOR THE WATER QUALITY MANAGEMENT REQUIREMENTS

Water quality standards for the State of Oregon (Oregon Administrative Rules 340-41-205 through 325) and the State of Washington (Washington Administrative Code, Chapters 173-201 and 202) provide specifications to be met by implementation methods selected by the Forest.

Standards have been developed for several parameters potentially impacted by Forest management activities including:

a. increases in stream temperature
b. increases in turbidity
c. dissolved oxygen saturation
d. pH
e fecal coliform
f. total dissolved solids
g. toxic substances

On the Forest, most of the activities which affect water quality are related to timber management, grazing, and mining. They include removal of trees, road construction, site preparation for reforestation, burning of brush and organic debris, grazing in riparian areas, and acid mine drainage. (For more discussion, see FEIS Chapter IV, "Soil and Water" section).

The primary approach to maintaining water quality on Umatilla National Forest lands is to: (1) Disperse timber harvest through time and space to avoid potential for cumulative impacts; (2) maintain sufficient shade producing vegetation along streambanks to maintain stream temperatures within acceptable limits; (3) implement Best Management Practices in road construction, timber, and other harvest activities, (4) carefully manage riparian grazing activities; and (5) control acid mine drainage where legally and technically feasible.

Timber harvest is dispersed to meet the MR by limiting harvest in each planning basin to no more than 30 percent of the area; opportunity costs are negligible at this level. Riparian grazing management and acid mine drainage control have no opportunity costs associated with their application. Also, implementation of Best Management Practices does not preclude other resource management options. Maintaining sufficient vegetation to meet temperature requirements is the subject of additional examination here

The required watershed condition, and the standards that indicate achievement of the water quality MR, are described in the Land and Resource Management Plan Chapter 4 and FEIS Appendix D, Forest-wide Standards and Guidelines The following specifications are addressed in this appendix: Riparian Area Standard and Guideline: Meet state water quality standards for stream temperatures and other parameters and protect fish habitat.

ALTERNATIVE WAYS OF MEETING THE MANAGEMENT REQUIREMENTS FOR WATER QUALITY

Alternative ways for meeting the specifications shown above could be modeled in FORPLAN to simulate the required end conditions. In the model, these become alternative constraints that set limits on how FORPLAN schedules timber harvest to maximize PNV. (FORPLAN constraints are discussed in the FEIS, Appendix B, "Development of Management Requirements.") The following two alternatives were considered:

Alternative 1: Set aside shade producing streamside vegetation (no scheduled timber harvest).

The alternative is designed to minimize vegetation disturbance, and schedules no timber harvest in riparian areas. No shade providing vegetation would be removed by timber harvest in riparian areas.

Alternative 2: Selective harvest of shade producing streamside vegetation to provide minimally acceptable level of stream temperature protection (scheduled timber harvest).

A moderate level of removal of shade producing vegetation is allowed from the riparian area. The alternative is designed to maintain existing water temperatures in streams within a subwatershed as regrowth of shade producing vegetation (previously removed by past activities) balances removal associated with new projects. The Forest used a shading requirement of maintaining 75 percent of original shade over a stream (from Field Guide to Oregon Forest Practices Rules, January 1980) for all Class I, II, and III streams. The alternative provides for retention of only that component of riparian vegetation producing the critical levels of shade needed to prevent violations of state water quality standards for stream temperature. Only limited protection of other riparian parameters such as provision of large woody material, big game cover, snags, and riparian dependent wildlife habitat is afforded.

EVALUATION OF IMPLEMENTATION METHODS USED TO MEET WATER QUALITY MANAGEMENT REQUIREMENTS

Either of the alternative means or implementation methods noted above would meet the MR, and each warrants more detailed analysis.

OPPORTUNITY COSTS

The opportunity costs of implementation methods for meeting water quality MR's were estimated by comparing the differences in PNV and ASQ that would occur with and without the constraints that simulate the means for accomplishing the required condition. Table M-4 compares the PNV and ASQ opportunity costs of the alternative implementation methods (means) for water quality protection.

TABLE M-4
OPPORTUNITY COSTS ASSOCIATED WITH ALTERNATIVE MEANS FOR MEETING WATER QUALITY MR'S
Umatilla National Forest

	First Decade ASQ			
	MMCF/Year (MMBF/Year)	Change in ASQ [1] Percent	PNV Million $	Change in PNV Percent
PNV Benchmark with no Protection Measures	38.1 (213)	--	1,532 0	--
	OPPORTUNITY COST -- APPROXIMATE CHANGE			
Opportunity Cost of Meeting Management Requirements with Alternative 1 (No vegetative removal)	2 3 (12 6)	6	+2 0	+0 1
Opportunity Cost of Meeting Management Requirements with Alternative 2 (Moderate vegetative removal)	0 5 (2 7)	1 3	+4 0	+0 3

[1] Percent change calculated on cubic foot basis

CONSEQUENCES OF ALTERNATIVE MEANS OF MEETING WATER QUALITY

The opportunity costs of removing no vegetation from the riparian areas are approximately 5 percent greater than in the moderate shade removal alternative. This alternative would go beyond meeting the requirement of protecting stream temperatures; over time, the temperature would be enhanced (lowered) as more shade would be provided. In those basins where past activities have removed substantial shade producing vegetation along streams, the no-vegetative-removal alternative could enhance fish habitat.

RATIONALE FOR THE SELECTED IMPLEMENTATION MEANS

Implementation methods (means) for meeting the management requirements for water quality are based on standards and practices that existed before the NFMA regulations Consequently, interpretations and processes for meeting these requirements are already established on the ground. By implementing Alternative 2 as the management requirement level, the Forest would meet state water quality standards throughout the planning period while minimizing PNV and ASQ opportunity costs.

IMPLICATIONS FOR FEIS ALTERNATIVES AND FOREST PLAN

The Forest used varying levels of riparian management ranging from the management requirement level (Alternative 2) to no harvest (Alternative 1, Management Area C7 and others) and two intermediate management strategies (C5 and C6). Each of the riparian alternatives or some combination is considered in the range of various alternatives displayed in the FEIS.

The FEIS Chapter II and Appendix B discuss the effects of meeting water quality requirements in FEIS alternatives. Actual Plan alternatives will have somewhat lower opportunity costs than those shown in Table M-4 since overlap from lands withdrawn for wildlife, scenery, recreation or other nontimber objectives will help to provide shade producing vegetation.

Alternative 2 has been incorporated, in part, into the riparian management policy and direction adopted by the Umatilla National Forest. In fact, restrictions on harvest within riparian areas in the Forest Plan provide for a level of protection intermediate between the alternatives considered above. This adopted riparian policy provides for maintenance and enhancement of water quality, fish habitat, big game, riparian, wildlife, and floodplain values. The policy addresses and resolves issues and concerns brought forward during the public involvement process and reflects an increased emphasis on riparian value protection.

ROLE OF MONITORING AND RESEARCH

The assumption that leaving shade producing vegetation in riparian areas is necessary to maintain viable populations of fish is based on extensive research that describes the importance of water temperature for water quality and habitat.

Continued monitoring will be done on water temperature fluctuations and other stream parameters due to removal and growth of stream shade producing vegetation. See the Summary of Monitoring Plan in Forest Plan Chapter 5.

MANAGEMENT REQUIREMENT FOR VIABLE POPULATIONS OF EXISTING NATIVE VERTEBRATE SPECIES

SOURCE OF THE MANAGEMENT REQUIREMENT

The NFMA regulations require that:

"Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure continued existence in the planning area. In order to insure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area" (36 CFR 219.19).

DESCRIPTION OF THE MANAGEMENT REQUIREMENT

All vertebrate species in Region Six were assessed with regard to population numbers and/or distribution that could result in either Forest-wide or Regional extinction during the next five decades. Management requirements were developed for species whose viability would be at risk if no management actions were taken to protect their habitats.

The focus was on habitats that were likely to be limiting in the future (in short supply either in total acreage or in distribution) and on identification of particular species that could be used to represent all species dependent on those habitats This identification was done on a subregional basis, recognizing the variability of situations within the Region. Once these species were identified, the Region defined their habitat requirements and biological characteristics. The species are included in the list of Management Indicator Species (MIS) that the Forest addresses in forest planning and subsequent monitoring.

Table M-5 displays current Regional management requirement direction regarding limited habitats and wildlife species by sub-regional zones. The Umatilla National Forest is in Zone IV

Pileated woodpecker, pine marten, and northern three-toed woodpecker are the only species for which alternative ways of meeting management requirements are evaluated MR's for threatened and endangered species, sensitive species. Special habitats and dead and defective tree habitat are not addressed in this analysis because opportunity costs associated with providing sufficient habitat to maintain viable populations are less than 2 percent The MR's for fish are met with the same management practices which provide the requirements for water quality and riparian area management, therefore further analysis is not provided.

TABLE M-5
SPECIES MATRIX FOR ADDRESSING MR'S
FOR WILDLIFE AND THREATENED AND ENDANGERED SPECIES
Umatilla National Forest

Zone Habitat	Zone 1 North Coastal	Zone 2 Westside Cascades	Zone 3 Eastside Cascades	Zone 4 Blue Mountains
Mature and Old Growth (Seral Stages V and VI)	*Northern Spotted Owl Pine Marten Pileated Woodpecker	*Northern Spotted Owl Pine Marten Pileated Woodpecker	*Northern Spotted Owl Pine Marten Pileated Woodpecker Northern three-toed Woodpecker	Pine Marten Pileated Woodpecker Northern three-toed Woodpecker
	*The Final Supplemental Environmental Impact Statement and subsequent Record of Decision provide direction for management of spotted owl habitat in Region Six			
Dead and Defective	Primary Cavity Excavators	Primary Cavity Excavators	Primary Cavity Excavators	Primary Cavity Excavators
Riparian	The Forest determined (and documented as part of the planning records) whether it needed to address wildlife in addition to fish, and if so which wildlife species would represent the riparian habitat. Coordination of this process with adjacent national forests was necessary to determine consistency			
Big Game		Mountain Goat	Mountain Goat (Wenatchee)	
Threatened and Endangered Species	Bald Eagle Peregrine Falcon Brown Pelican Aleutian Canada Goose	Bald Eagle Peregrine Falcon	Bald Eagle Peregrine Falcon Grizzly Bear Woodland Caribou (Colville)	Peregrine Falcon

HABITAT NEEDS

Once the species needing management requirements were identified, the Region defined habitat requirements and biological characteristics. These are the basis for providing habitat and also for deciding how best to represent the species' needs in the planning process and in the FORPLAN Model.

Habitat needs were defined using information from existing research whenever possible (see bibliography). This information was used to define the habitat conditions, habitat dispersal, and habitat size necessary to meet the MR. When information was available, but did not exactly fit the MR context, professional judgment was used to apply the information in estimating habitat needs. When information was not available, habitat needs were developed using the professional judgment of a number of biologists most knowledgeable on the subject. Information from existing research was used whenever possible.

Specific information on habitat needs, specifications for meeting habitat requirements, and alternative ways of meeting the MR's for pine marten, pileated woodpecker, and northern three-toed woodpecker are presented in the following sections. For each species, information is provided for the following three habitat factors:

1. **Principal Habitats Used**

   Information about the seral stages and Kuchler vegetation types which are used by the various species is documented in many research papers for individual species. Information as to which Kuchler types and/or seral stages are primary or secondary habitat, and the amount of dependency upon each habitat, is based mostly on professional judgment (Guenther and Kucera 1978, Phillips and others, 1981).

2. **Dispersal Distance Between Habitats**

   The guideline on distribution of habitat areas is intended to establish a network that allows individuals of a species to successfully disperse to adjacent habitat areas. This provides for interactions among individuals and prevents isolation of sub-populations. This guideline is called the dispersal distance. Research information alone is generally not adequate to establish reasonable dispersal distances between habitats. As a result, dispersal distance is often determined on the basis of observations, experience, and professional judgment. In establishing the network of habitat areas for each species, consideration is given to habitats in reserved areas and to habitat areas being established for other species.

3. **Size of Habitat Areas**

   The size of individual habitat areas provided for each wildlife species is based on the habitat acreage needed to support the basic social or reproductive unit of the species, i e., breeding pairs. Both home range and species density information was used to estimate the needed size of habitat areas. This was supplemented with professional judgment where no data was available for the specific habitat types being managed

SPECIFICATIONS FOR MEETING HABITAT REQUIREMENTS FOR THE FOREST INDICATOR SPECIES

Approximately 40 wildlife species are known to depend upon or prefer mature/old growth tree habitat during some part of their life cycle on the Umatilla National Forest. By providing a dispersion of mature and old growth tree habitat sites for the pileated woodpecker, pine marten, and northern three-toed woodpecker, we are assuming that other species preferring similar conifer habitats will have adequate habitat to maintain viable populations throughout the planning period.

Regional specifications for pileated woodpecker, pine marten, and northern three-toed woodpecker are discussed in the following sections. The specifications are summarized from "A Report on Minimum Management Requirements for Forest Planning on the National Forests of the Pacific Northwest Region, USDA Forest Service" (USDA Forest Service, June 1986). In developing the report, various habitat sizes and dispersal distances were considered. Based on that analysis, minimum habitat sizes and maximum dispersal distances were identified for each species. This information is based on the best available data. Alternatives which addressed changes to size or distribution were not considered in developing the Forest Plan.

Habitat specifications are summarized in Tables M-6, M-7, and M-8.

PILEATED WOODPECKER SPECIFICATIONS

1. Principal Habitats Used

Pileated woodpeckers need mature or old growth stands of timber for nesting and feeding. Habitats were identified in Bull and Meslow (1977), Guenther and Kucera (1978), and Thomas (1979).

2. Dispersal Distance Between Habitats

An initial 5-mile maximum dispersal distance between habitats resulted from professional judgment documented in Phillips and Roberts (1985). In June of 1986, the distance between habitats was modified to one habitat area for every 12,000 to 13,000 acres (about 5 miles apart) to allow greater flexibility in application. Irwin (1987) suggested that this distance could be greater, but also noted that dispersal distances of juvenile pileated woodpeckers are poorly known He offered no concrete alternative to the 5-mile distance. Bull (1987) noted that the distance moved by eight juveniles from the nest where they were raised to the territory that they later occupied ranged from 0 4 to 5 4 miles and averaged 2.1 miles.

3. Size of Habitat Areas

The size of areas used for nesting and roosting by pileated woodpeckers in Region 6 has been identified as a range of from 100 to over 810 acres To meet the needs of pileated woodpeckers both east and west of the Cascades, a quantity of 300 acres of old growth or mature timber for nesting and roosting sites, plus 300 acres of feeding area, was defined as a Region-wide management requirement. Three hundred acres of nesting and roosting area appears to be an average among different habitats. As more data specific to westside and eastside habitats (eastside may be further subdivided) become available, the size of the nesting area may be adjusted (Bull and Meslow, *1977*; Bull, 1975; Mannan, 1982; Mellen, 1987). Mellen (*1987*) has already suggested an increase in foraging and nesting habitat area in westside habitats based on results from radiotelemetry of pileated woodpeckers in the Oregon Coast Range. A 1,000-acre unit was established as the minimum size territory that a pair of woodpeckers would defend. This was determined from research data. Snag size and density were taken from Thomas (*1979*), and acreage figures from Bull (*1987*) and Bull and Meslow (*1977*) See Table M-6 for summary of habitat specifications.

TABLE M-6
PILEATED WOODPECKER HABITAT REQUIREMENTS (Zone IV[1])
Umatilla National Forest

	Principal Habitats Used	Dispersal Distance Between Habitats	Habitat Requirements to be Used in Analyses
A	Reproducing		
	Seral Stages V and VI of Kuchler types K11, K12, K14, K15, and riparian	One habitat area for every 12,000 to 13,000 acres	Maintain 300 acres of conifers in seral stages VI and/or V, per pair for reproducing
			Maintain a minimum average of 2 hard snags per acre at least 12 inches dbh, within the 300-acre reproductive area Forty-five of these 600 snags should be at least 20 inches dbh
			When possible, maintain reproductive area in 300 contiguous acres. If not possible, habitat may be arranged in blocks no less than 50 acres and no more than 1/4 mile apart
B	Feeding		
	All seral stages of Kuchler types listed for reproducing habitat, provided snags are present.		Maintain a minimum average of 2 hard snags per acre at least 10 inches dbh on an additional 300 acres for feeding.

[1] Umatilla National Forest is in Zone IV, Blue Mountains Principal habitats used vary by zone in the Region

PINE MARTEN SPECIFICATIONS

1. Principal Habitats Used

The pine marten uses seral stages III to VI – closed sapling-pole, large mature, and old growth (Thomas, 1979; Guenther and Kucera, 1978; Phillips and others, 1981). The Kuchler types used are from Guenther and Kucera (*1978*). The principal habitat for pine marten is seral stages V and VI (mature and old growth).

2. Dispersal Distance Between Habitats

Burke (1982) recommends that the maximum dispersal distance between habitat areas for pine marten should be 2 miles. In 1984 the Regional Forester changed the dispersal distance from 2 miles to 3 miles. This change was made because it was felt where more than one adjacent habitat is available for dispersal, the dispersal distance can be extended to 3 miles for pine marten This change has been reviewed by a number of biologists within and outside the Forest Service and most agree that it would appear not to create a population viability problem for represented species In June of 1986, the dispersal distance specification for pine marten habitat was changed to one habitat for every 4,000 to 5,000 acres (about 3 miles apart) to allow greater flexibility in application

Juvenile marten dispersal up to 25 miles has been observed (Hawley and Newby, 1957 and Jonkel, 1959), and average juvenile dispersal distances greater than 6 miles were observed in these studies and in Burnett (*1981*) Based on this information, Irwin (*1987*) concluded that "the dispersal distance used in the MR standards might be increased without reducing probabilities for interactions among adults or dispersing young." However, he did not provide a specific alternative, and concluded that there was little empirical insight into the probability of maintaining a viable marten population using the MR guidelines. As Burke (*1982*) noted, the distance covered by dispersing individuals is not an absolute guide to appropriate spacing between habitat areas. The probability of dispersing individuals locating habitat areas, and other individuals, decreases rapidly as habitat areas are spaced further apart. Burke suggested that the observed range of population densities might be a better guide to spacing of habitat areas. He noted that the 3-mile spacing would result in a marten density of 1/9 to 1/27 of normal densities reported in the literature.

3. Size of Habitat Areas

In the professional judgment of the biologists listed in Phillips and Roberts (1985), a breeding female pine marten can be supported on 160 acres of quality habitat. Research is variable as to the size of area needed, but the female pine marten home range is estimated to be 160 acres (Campbell 1979). The biologists listed in Phillips and Roberts (*1985*) judged that this area should be contiguous to ensure that there would be enough habitat within the home range of the female. They also judged that crown closure should equal or exceed 50 percent. Research papers indicate that areas with a low percent crown closure receive little or no use by pine marten. Therefore, to ensure an adequate crown closure, a minimum requirement of 50 percent closure was selected.

Research shows that pine marten require dead and down material for foraging, cover, and denning Six down logs/acre (Burke *1982*) was selected as the minimum down material requirement. The number and size of snags required was selected to ensure that the amount of down material was achieved. The specifications for pine marten habitat are summarized in Table M-7.

Irwin (*1987*) noted that the MR guidelines contained an implied hypothesis that 160-acre areas would meet reproductive and winter range needs, and that marten would use broader areas containing a mix of less suitable habitat types at other times. He concluded that monitoring and research could provide appropriate tests of this hypothesis.

TABLE M-7
PINE MARTEN HABITAT REQUIREMENTS (Zone IV[1])
Umatilla National Forest

	Principal Habitats Used	Dispersal Distance Between Habitats	Habitat Requirements to be Used in Analyses
A	Reproducing		
	Seral stages V and VI of Kuchler types K4, K12, K13, K14, K15 and lodgepole climax	One habitat area for every 4,000 to 5,000 acres	Maintain 160 contiguous acres of conifer in seral stages V or VI with a crown closure 50 percent or greater (This figure represents the territory of one female and part of the territory for a male)
			Maintain an average of two hard snags per acre at least 12 inches dbh, 24 of these 320 snags should be at least 20 inches dbh
B	Feeding		
	Seral stages III-IV of Kuchler types listed for reproducing habitat		Maintain a minimum average of six down logs per acre at least 12 inches dbh and 20 feet long

[1] Umatilla National Forest is in Zone IV, Blue Mountains Principal habitats used vary by zone in the Region

NORTHERN THREE-TOED WOODPECKER SPECIFICATIONS

1. **Principal Habitats Used** – The three-toed woodpecker represents species dependent upon mature and old growth seral stages. Habitats listed are the result of a literature review of Guenther and Kucera (1978), Jackman and Scott (1975), and Thomas (1979)

2. **Dispersal Distance Between Habitats** – The 2-mile dispersal distance between habitats was the result of professional judgment documented in Phillips and Roberts (1985). In June 1986, this dispersal distance was converted to allow one habitat for every 2,000 to 2,500 acres to permit greater flexibility in application.

3. **Size of Habitat Areas** – The 75 acres per pair was taken from Thomas (*1979*). The specific numbers and size class for snags as well as seral stages was based on data from Jackman and Scott (*1975*) and Thomas (*1979*). The habitat specifications for the three-toed woodpeckers are summarized in Table M-8.

TABLE M-8
NORTHERN THREE-TOED WOODPECKER HABITAT REQUIREMENTS (Zone IV[1])
Umatilla National Forest

	Principal Habitats Used	Dispersal Distance Between Habitats	Habitat Requirements to be Used in Analyses
A.	Reproducing		
	Seral stages V and VI of Kuchler types K4, K15, and lodgepole climax	One habitat area for every 2,000 to 2,500 acres	Maintain 75 acres of conifers in seral stages VI and/or V, per pair for reproducing
B	Feeding		
	All seral stages of Kuchler types K4, K15, and lodgepole pine, provided snags are present		Maintain a minimum average of two hard snags per acre at least 10 inches dbh within 75-acre reproductive areas Of these 150 snags, 45 should be at least 12 inches dbh

[1] Umatilla National Forest is in Zone IV, Blue Mountains Principal habitats used vary by zone in the Region

ALTERNATIVE WAYS CONSIDERED FOR MEETING THE MANAGEMENT REQUIREMENT

Application of the Regional direction for size and disperal of old growth tree habitats on the Umatilla National Forest requires a minimum of 55,370 acres of mature/old-growth forest (outside of wilderness or other lands not suitable for timber production) be retained as wildlife habitat for the three indicator species and other species occupying the same habitat. Although differing in the size and distribution requirements, the principal habitats used by the three indicator species (pileated woodpeckers, pine marten, and northern three-toed woodpecker) overlap considerably. In order to reduce the total amount of old-growth/mature forest necessary to provide for viable populations, every opportunity was taken to overlap areas managed for these indicator species, i e., a habitat area for a pileated woodpecker is also suitable for a pine marten. Many of the designated pine marten habitat areas are also suitable for the three-toed woodpecker. Consequently, opportunity costs for one species cannot reasonably be considered separately from the others.

Habitat areas for pine marten, pileated woodpecker, and northern three-toed woodpecker were mapped using regional spacing, size, and habitat suitability criteria. Whenever possible, sites were placed within Wilderness, Wild Rivers, RNA's, other areas unsuitable for timber production, and in areas of reduced harvest levels, wherever these met habitat quality and distribution requirements. Table M-9 summarizes the number of mature conifer sites for pileated woodpecker, pine marten, and northern three-toed woodpecker located on unsuitable and tentatively suitable timber lands

TABLE M-9
MATURE CONIFER HABITAT SITES
Umatilla National Forest

Species	Every M Acres Distribution Requirements	Sites Unsuitable Timber Land	Sites Suitable Timber Land
Pileated Woodpecker	12-13	38*	93*
Pine Marten	4-5	31	27
Northern Three-Toed Woodpecker	2-2 5		

* Includes a total of 41 units shared with pine marten (15 on suitable and 26 on unsuitable lands)

Once the minimum number of habitat sites was determined using regional spacing and habitat suitability specifications, the Forest considered two options for providing mature/old growth conifer habitat.

Alternative 1: Dedicated Sites

Under a dedicated mature/old growth conifer strategy, the required number of acres of suitable conifer habitat is withdrawn from timber production and would be expected to remain in suitable habitat condition for several decades. Dedication of mature conifer sites has the advantage that the location of the stand does not change over time, making implementation less complicated. Dedication also assures that desired structural characteristics will be available for wildlife. There may be some risk of loss of individual stands through natural catastrophes such as wildfire or insects and disease. Recent literature on old growth, however, suggests that such risk is much less than once thought Indeed, management of old growth on a harvest basis, and replacing it, removes structural characteristics important to old growth and may hasten the decline of the residual stand (Franklin and others 1981).

Alternative 2: Managed Sites

The second option was to manage timber stands on a larger area in order to harvest timber and produce replacement stands over time. This option involves the projection of long rotations on enough acres to maintain the necessary habitat through time, with all areas being rotated. The "managed old growth" habitat strategy assumed equal acreages in each of 2 to 3 defined age classes depending on the tree species involved. For the mixed conifer and ponderosa pine types units, three age classes (0-80, 81-160, 161-240 years), and for lodgepole pine, two age classes (0-50, 50-100 years) are required This means that for every acre of suitable habitat, another 1 to 2 acres would be managed as replacement stands when the original acre is harvested.

Management of mature conifer sites assumes that existing stands can be harvested as other stands grow into a mature conifer condition to replace them. If replacement stands fail to develop desired structural characteristics (i.e., large diameter snags and down material) as predicted, mature conifer habitat would either be lost for a period of time, or there would be a further delay in harvesting the existing mature conifer stands.

The managed sites approach has the advantage of providing some timber harvest while meeting the needs of wildlife species.

ANALYSIS OF OPPORTUNITY COSTS

The two alternatives considered to meet viable populations of wildlife species and their management requirements were analyzed and have associated opportunity costs which are displayed in Table M-10. The examination of opportunity costs and efficiency for providing mature/old growth forest habitat through dedicated or managed rotated stands is accomplished though an evaluation of per-acre timber production and economic efficiency of the possible regimes The analysis is based on a Forest-wide evaluation.

TABLE M-10
OPPORTUNITY COST OF ALTERNATIVE WAYS OF MEETING THE MATURE CONIFER MANAGEMENT REQUIREMENT
Umatilla National Forest

	First Decade Allowable Sale Quantity MMCF/YR (MMBF/YR)	Changes in Allowable Sale Quantity [1]	Present Net Value Million $	Change in Present Net Value
Maximum PNV Benchmark	38 1 (213 0)	–	1,531 6	–
		Opportunity Cost--Approximate Change		
Opportunity Cost to Meet Old Growth/Mature Conifer Management Requirements with Dedicated Habitat	2 4 (13 7)	6 3%	24 0	1 6%
Opportunity Cost to Meet Old Growth/Mature Conifer Management Requirements by Managing with Replacement Stands (three unit rotation/240 years)	1 9 (10.9)	5 0%	17 0	1.1%

[1] Percent change calculated on cubic foot basis

CONSEQUENCES OF THE DIFFERENT WAYS OF MEETING THE MANAGEMENT REQUIREMENTS

Populations of pileated woodpeckers and pine marten would not be expected to differ significantly under either alternative since both would maintain the same amount and distribution of habitats. There are, however, some "loss" of timber production and PNV opportunities as shown in Table M-10

RATIONALE FOR THE SELECTED METHOD

The analysis shows the managed approach to be slightly more economically efficient than the dedicated old growth approach. However, given the range of error in modeling, the management approaches are basically equivalent in cost efficiency with little difference in change of present net value The Umatilla National Forest, therefore, decided to use the dedicated approach for managing old growth tree habitat (except for lodgepole pine) for the following reasons:

- Dedicated old growth management provides a more dependable approach to meeting objectives. Units are locatable and can be more easily tracked and managed through time; other resource activity impacts are minimized.

- Various publics, including state wildlife agencies, have indicated a preference for dedicated old growth.
- Adjacent forests with similar timber inventory structures show the dedicated old growth approach to be more cost efficient.
- Dedicated old growth stands were mapped in a manner to minimize the impact on the suitable timber land base.

Lodgepole pine mature/old growth tree habitat will utilize the "managed" site option due to the silvics of the tree species. The managed option is used to avoid lodgepole pine stand stagnation and to better and more quickly develop the 10-inch dbh trees specified in the management requirement direction.

IMPLICATIONS FOR FEIS ALTERNATIVES AND FOREST PLAN

All alternatives (except Alternative A) contain at least the MR level of dedicated mature tree/old growth and managed lodgepole pine as shown in Table M-11, Alternative A uses the managed approach exclusively.

Table M-11
SUMMARY OF OLD GROWTH TREE HABITAT USED IN ALTERNATIVES
Umatilla National Forest

	Non-Wilderness		Wilderness		Forest Totals	
Category	No. Units	Acres	No. Units	Acres	No. Units	Acres
1. Pileated Woodpecker	93	27,900	38	11,400	131	39,300
2. Pine Marten	27[1]	4,320	31[2]	4,960	58[3]	9,280
3. Two-Toed Woodpeckers	42	3,150	12	900	54	4,050
Totals:	162	35,370	81	17,260	193	52,630

1 15 units shared with pileated woodpecker
2 26 units shared with pileated woodpecker
3 A Forest total of 41 units shared with pileated woodpecker.

Alternatives were designed to address public issues. As a result, some alternatives, including the Preferred Alternative (Forest Plan), incorporate objectives for retention of old growth and mature tree stands, for wildlife and other recreational purposes, at levels higher than needed to meet the basic management requirement. Mature tree/old growth habitat also occurs in other management allocations such as wilderness, roadless areas, and riparian areas; these acres also contribute to the overall available habitat for wildlife for many of the alternatives.

The alternatives show range and variation in harvest levels within the decision space considered by the Forest in responding to public issues. If these alternatives could have been formulated without adding the constraints necessary to meet the management requirement, some increase in ASQ and PNV would have resulted.

ROLE OF MONITORING AND RESEARCH

The Summary of Monitoring Plan (Forest Plan Chapter 5) specifies monitoring populations and habitats of pileated woodpeckers, pine martens, three-toed woodpeckers, and primary cavity excavators. In future planning efforts, this data will be considered in determining the suitability and effectiveness of the selected ways for meeting the management requirement for viable populations. This is important in testing the appropriateness of the selected modeling assumptions.

Information needs for pine marten, pileated woodpecker and northern three-toed woodpecker include:

1. Dispersal distances·

    a. How far can juveniles successfully disperse?
    b As habitat becomes increasingly fragmented, what is the ability of dispersing individuals to locate habitat islands?
    c. What effect does the size of habitat areas have on the ability of dispersing individuals to locate these sites?

2. Size of mature conifer habitat sites:

    a. Occupancy and use of habitat sites, particularly as the sites become more isolated.
    b. Reproductive success within habitat sites.
    c. Home range size in fragmented forests.

3 Utilization and reproductive success of northern three-toed woodpeckers in mature conifer sites managed on a 100-year rotation (i.e., Are managed sites meeting habitat needs as compared to natural stands?).

4. Population density, home range size, and distribution of pine marten in northeast Oregon and southeast Washington.

REFERENCES

Bull, Evelyn L. and E. Charles Meslow. Habitat requirements of the pileated woodpecker in Northeastern Oregon. Journal of Forestry 1975 (6). 1977. p. 334-337.

Bull, Evelyn L. Habitat utilization of the pileated woodpecker, Blue Mountains, Oregon. Corvallis, OR: Oregon State University; 1975. 58 p. M.S. thesis.

Bull, Evelyn L. Ecology of the pileated woodpecker in northeastern Oregon. J. Wdlf. Manage. 51:472-481. 1987.

Burke, T.E. Marten. Unpublished manuscript. Colville National Forest, Washington. 1982.

Burnett, B.W. Movements and Habitat Use of American Marten in Glacier National Park, Montana. Missoula, MT: University of Montana, 1981. M S thesis.

Campbell, T.M Short-term effects of timber harvest on pine marten ecology. Ft Collins, CO: Colorado State University; 1979. 71 p. M.S. thesis.

Franklin, Jerry F. and others. Ecological characteristics of old-growth Douglas-fir forests. Gen. Tech. Rep. PNW-118. USDA Forest Service Pacific Northwest Forest and Range Experiment Station; 1981.

Guenther, K. and T. Kucera. Wildlife of the Pacific Northwest. USDA Forest Service, Pacific Northwest Region; 1978 October.

Hawley, V.D. and F.E Newby. Marten home ranges and population fluctuations in Montana. J. Mammal; 1957. 38:174-184.

Jackman, S. M. and J.M. Scott. Literature review of 23 selected forest birds of the Pacific Northwest. USDA For. Serv. Reg 6, Portland, OR, 1975. 382 pp.

Irwin, L.L. Review of minimum management requirements for indicator species: pine marten and pileated woodpecker. National Council of the Paper Industry for Air and Stream Improvement Tech. Bull. No. 522. New York; 1987. 24 p.

Jonkel, C.J. Ecological and Physiological Study of the Pine Marten. Missoula, MT: Montana State University; 1959. M S. thesis.

Mannan, R. W. Territory size and habitat preferences of pileated woodpeckers in Western Oregon. Oregon State University Corvallis Ag. Exp. Stat Tech. Paper 000; 1982.

Mellen, T.K. Home range and habitat use of pileated woodpeckers, Western Oregon. Corvallis, OR· Oregon State University; 1987. 96 p. M.S. thesis,

Phillips, C.A. and R. Roberts Documentation of Wildlife MMR's. USDA Forest Service Memo; 1985 June 4.

Phillips and others. Wildlife habitats and species management relationship program; January 1981.

Thomas, J.W. ed. Wildlife habitats in managed forests: The Blue Mountains of Oregon and Washington. USDA Agric. Handbook No. 553. Washington, D. C.; 1979.

U.S. Department of Agriculture, Forest Service. A report on minimum management requirements for Forest planning on the National Forests of the Pacific Northwest Region; June 1986.

U.S. Department of Agriculture, Forest Service Final supplement to the environmental impact statement for an amendment to the Pacific Northwest Regional Guide (two volumes): spotted owl guidelines. Pacific Northwest Region, Portland, OR, 1988.

APPENDIX N

APPENDIX N

PUBLIC INVOLVEMENT

TABLE OF CONTENTS

	Page
INTRODUCTION	N-1
SUMMARY OF PUBLIC INVOLVEMENT	N-1
SUMMARY OF PUBLIC PARTICIPATION ACTIVITIES	N-10
RESPONDENTS TO THE UMATILLA NATIONAL FOREST DRAFT FOREST PLAN	N-17
AGENCIES	N-17
ORGANIZATIONS	N-18
INDIVIDUALS	N-20
SUMMARY OF PUBLIC COMMENTS ON MAJOR SUBJECTS	N-42
INTRODUCTION	N-42
WATER, SOIL, AND AIR	N-42
VEGETATION	N-43
RESEARCH NATURAL AREAS	N-44
TIMBER	N-44
RANGE	N-47
WILDLIFE	N-48
BIG GAME	N-49
OLD GROWTH	N-50
(MINIMUM) MANAGEMENT REQUIREMENTS	N-51
THREATENED AND ENDANGERED SPECIES (ANIMALS)	N-51
RIPARIAN	N-51
FISH	N-52
MINERALS AND ENERGY	N-52
PROTECTION	N-53
ROADS	N-54
LAND STATUS AND LAND USES	N-55
RECREATION	N-55
SPECIAL INTEREST AREAS	N-59
ARCHEOLOGY-HISTORY-CULTURAL RESOURCES	N-59
WILD AND SCENIC RIVERS	N-59
WILDERNESS	N-60
ROADLESS AREAS	N-60
INDIAN TREATY RIGHTS	N-62
ECONOMIC AND SOCIAL CONSIDERATIONS	N-63
COMMUNITY STABILITY/OTHER SOCIAL CONCERNS	N-64
FOREST COORDINATION	N-65
PLANNING	N-66
FOREST MANAGEMENT	N-70
SUMMARY OF PUBLIC COMMENTS ON ALTERNATIVES	N-72

Page

SUMMARY OF NEW ALTERNATIVES SUGGESTED BY THE PUBLIC N-74

RESPONSE TO SUBSTANTIVE PUBLIC COMMENT N-78
WATER N-79
SOIL N-94
ECOSYSTEMS AND DIVERSITY N-100
RESEARCH NATURAL AREAS N-105
TIMBER N-111
RANGE N-143
WILDLIFE (GENERAL) N-158
BIG GAME N-189
THREATENED, ENDANGERED, AND SENSITIVE SPECIES N-218
RIPARIAN AREAS N-226
FISH N-242
MINERALS N-254
PROTECTION - FIRE/FUELS/AIR QUALITY N-256
PEST MANAGEMENT AND PESTICIDE USES N-258
TRANSPORTATION N-260
LANDS N-264
RECREATION N-265
WILD AND SCENIC RIVERS N-279
SPECIAL INTEREST AREAS N-284
WILDERNESS N-287
ROADLESS AREAS N-290
INDIAN TREATY RIGHTS N-296
SOCIOECONOMIC N-301
PLANNING N-308

REFERENCES N-333

LETTERS FROM ELECTED OFFICIALS, FEDERAL AND STATE AGENCIES, AND INDIAN TRIBAL GOVERNMENTS N-334

LIST OF TABLES

Table No. Page

N-1 RESPONSES BY RESPONDENT LOCATION N-2

N-2 RESPONSES BY RESPONSE CATEGORY N-2

N-3 NUMBER OF RESPONSES BY ORGANIZATIONS N-3

N-4 PUBLIC RESPONSES BY TYPE OF INPUT N-3

N-5 NUMBER OF COMMENTS BY ALTERNATIVE/PLANNING PROCESS N-4

N-6 NUMBER OF COMMENTS BY GENERAL SUBJECT N-5

N-7 NUMBER OF COMMENTS BY SUBJECT N-6

APPENDIX N

INTRODUCTION

Appendix N documents the public involvement activities and public comment on the proposed Forest Plan. The appendix presents the efforts made by the Forest to involve and consult the public during review of the draft Plan and DEIS. Included are. A summary of the comments received; the identified substantive comments and corresponding Forest responses, a list of agencies, organizations, and individuals who commented; and copies of comment letters from elected officials, agencies, and Native American tribes. This appendix is supplemented by Appendix A, which describes the process used in developing the Issues, Concerns, and Opportunities displayed in the draft documents.

SUMMARY OF PUBLIC INVOLVEMENT

RELEASE OF DOCUMENTS

The proposed Forest Plan and Draft Environmental Impact Statement were sent to the public beginning on November 13, 1987. The proposed Plan and DEIS were filed with the Environmental Protection Agency (EPA) on November 20 and published in the Federal Register on November 27, which was the start of the public comment period The comment period closed on March 28, 1988, after being extended 30 days from February 26.

Approximately 1,050 copies of the Summary and 800 sets of the proposed Forest Plan, DEIS, and maps were distributed to the public. Copies were made available for review in public and college libraries in Baker, Hermiston, Weston, Bend, Portland, Eugene, Pendleton, La Grande, and Union, Oregon; Cheney, Walla Walla, Pullman, Clarkston, Pomeroy, and Dayton, Washington; Moscow, Idaho; and at Forest Service offices throughout Oregon and Washington.

PUBLIC INVOLVEMENT

Eighteen "formal" open houses were held in 5 Washington and 12 Oregon communities between November 30, 1987, and January 19, 1988. Approximately 420 people attended.

Fifty-seven additional meetings with the various participants have been held in 9 Washington and 19 Oregon communities since November 30, 1987. Cumulatively, about 1,500 people attended these meetings which covered a wide spectrum of interests.

All proposed Forest Plan documents were available for review and FS employees were available to answer questions or explain the documents at each of the districts and of the Supervisor's Office during the comment period. In addition to these planned activities, numerous other informal meetings, interviews, and presentations were conducted with various interest groups, individuals, and the media

Briefings for the state agencies were held in Olympia on January 6, 1988, and in Salem on December 1, 1987. A briefing was also held for the EPA in Seattle on January 11, 1988.

Norman Johnson and the Oregon State agency representatives held a town meeting in Pendleton on January 11, 1988, and agency representatives met with Forest personnel to discuss their findings on January 12.

Six meetings were held by the Forest interdisciplinary team to explain the proposed Forest Plan and DEIS to Umatilla National Forest employees.

Local timber industry representatives, miners, ranchers, OHV enthusiasts, and local elected officials developed an alternative which they called the "Citizens for Multiple Use and Resource Conservation Alternative." They campaigned this alternative heavily throughout the local area and to key contacts regionally and nationally. Their campaign consisted of a slide/tape program presented to small groups, and a questionnaire response form. At least two of their presentations were made to Forest employees

A coalition of environmental groups (centered around the Walla Walla, Washington, and Milton-Freewater, Oregon, area) also developed an alternative, named "Citizens Alternative E," which they promoted locally and regionally.

During the winter and early spring of 1990, a number of meetings were held with some of the groups and individuals that had been involved in the planning process. The meetings were aimed at finding and correcting last minute problems, briefing people on the anticipated contents of the final Plan, and answering questions surfaced since the DEIS meetings. Several meetings and discussions were held with members of the Oregon Governor's forest planning team to discuss the state's suggestions for the Forest Plan.

PUBLIC RESPONSE

There were 4,915 timely responses, plus 177 late ones (postmarked or received after March 28, 1988) for a total of 5,092. Nearly three-fourths (3,552) of the responses came from the Forest 10-county area of influence. Oregon's six-county area of influence accounted for 61 percent while the Washington portion contributed 11 percent. About 21 percent were from other parts of Oregon and Washington and 7 percent from various other states (see Table N-1).

TABLE N-1

RESPONSES BY RESPONDENT LOCATION

LOCATION	NO. OF RESPONDENTS	PERCENT
OREGON SIX-COUNTY AREA (OF INFLUENCE)	3,009	61
OTHER OREGON	401	8
WASHINGTON FOUR-COUNTY AREA (OF INFLUENCE)	543	11
OTHER WASHINGTON	643	13
OTHER STATES	319	7
TOTAL RESPONSES BY RESPONDENT LOCATION	4,915	100

The majority of responses came from individuals (95%), followed by organizations (4%) (see Table N-2).

TABLE N-2

RESPONSES BY RESPONSE CATEGORY

	NUMBER
CITY ELECTED OFFICIALS	5
CITY/MUNICIPAL GOVERNMENT	2
COUNTY AGENCIES	8
COUNTY ELECTED OFFICIALS	10
STATE AGENCIES	8
STATE ELECTED OFFICIALS	4
FEDERAL AGENCIES	10
FEDERAL ELECTED OFFICIALS	1
INDIAN TRIBAL COUNCILS	3
ORGANIZATIONS	212
INDIVIDUALS/FAMILIES	4,652
TOTAL RESPONSES BY CATEGORY	4,915

Of the organizations that responded, business or business groups provided the greatest response (29%); followed by conservationists/environmentalists and the timber industry (each at 13%); and academia, motorized recreation interests, and timber associations and unions (each at 6%). Each of the remaining organizations contributed between 2 and 4 percent of the responses (see Table N-3).

TABLE N-3

NUMBER OF RESPONSES BY ORGANIZATIONS

ACADEMIA	12
BUSINESS	62
CIVIC	8
CONSERVATIONIST/ENVIRONMENTALIST	28
HUNTING AND SPORTS	7
LIVESTOCK	6
MINING	6
MOTORIZED RECREATION	12
PROFESSIONAL	5
RIDING, SKIING, AND HIKING	4
TIMBER ASSOCIATIONS AND UNIONS	15
TIMBER INDUSTRY	26
OTHERS	21
TOTAL RESPONSES BY ORGANIZATIONS	212

Of the 4,915 timely responses, most (66%) were questionnaires (with space for comments) from persons who support the "Citizens for Multiple Use and Resource Conservation Alternative." Most of the remainder were either letters and postcards (22%) or form letters/postcards (8%). Only 2 percent utilized the Forest Service pre-addressed, pre-stamped response form (see Table N-4).

TABLE N-4

PUBLIC RESPONSES BY TYPE OF INPUT

RESPONSE FORM	NUMBER
FS RESPONSE FORM	132
LETTER/POSTCARD	1,084
FORM LETTER/POSTCARD	415
PETITIONS	4
RESOLUTIONS	8
ORAL COMMENTS	33
MULTIPLE-USE QUESTIONNAIRE	1,256
MULTIPLE-USE QUESTIONNAIRE WITH COMMENTS	1,983
TOTAL RESPONSES BY TYPE OF INPUT	4,915

Comments on the proposed Forest Plan and documents totaled 6,041 (22%) Alternatives presented in the DEIS received 9 percent of the comments; nearly half of those were on the preferred alternative. By far the most comments received concerned the "Citizens for Multiple Use and Resource Conservation Alternative" (61%) (see Table N-5).

TABLE N-5

NUMBER OF COMMENTS BY ALTERNATIVE/PLANNING PROCESS

ALTERNATIVE **A**	33
ALTERNATIVE **B** (RPA)	28
ALTERNATIVE **C**	37
ALTERNATIVE **D**	79
ALTERNATIVE **E**	911
ALTERNATIVE **F** (PREFERRED)	1,229
ALTERNATIVE **F/D**	29
ALTERNATIVE **G**	54
ALTERNATIVE **H**	15
ALTERNATIVE **I**	25
ALTERNATIVE **J**	42
NEW ALTERNATIVE(S) PROPOSED	329
CITIZENS ALTERNATIVE E*	855
MULTIPLE-USE ALTERNATIVE*	3,620
NEW ISSUES	26
ANALYSIS OR DATA	365
PLANNING PROCESS	34
PUBLIC INVOLVEMENT	63
ADEQUACY OF DOCUMENTS	203
OUTSIDE THE SCOPE OF THE PLAN	33
PROPOSED FOREST PLAN DOCUMENTS	386
PROPOSED FOREST PLAN	4,975
DEIS	603
APPENDICES	60
SUMMARY	11
MAPS	6
TOTAL COMMENTS ON ALTERNATIVES	28,078

* Not the number of comments, but the number of respondents indicating support (based on signatures).

Comments received concerning various general subjects totaled about 90,600 coded comments. Almost half of these dealt with four general subjects: timber, including firewood (18%), roadless areas (11%), dispersed recreation (10%), and wildlife and fisheries (10%). An additional 30 percent of the responses addressed forest management (9%), socioeconomic issues (8%), transportation (7%), and range (6%) (see Table N-6).

TABLE N-6

NUMBER OF COMMENTS BY GENERAL SUBJECT

WATER, AIR, & SOIL	2,756
RESEARCH NATURAL AREAS	154
TIMBER (INCLUDING FIREWOOD)	16,073
RANGE	5,171
WILDLIFE/FISH/RIPARIAN	9,453
OLD GROWTH AREAS	1,672
LANDS, SPECIAL USES, ENERGY, & MINERALS	4,180
TRANSPORTATION	6,041
PROTECTION (FIRE, INSECT & DISEASE CONTROL, PESTICIDES)	483
RECREATION, GENERAL	1,780
RECREATION, DEVELOPED	378
RECREATION, DISPERSED	9,117
VISUALS	400
SPECIAL INTEREST AREAS	78
ARCHEOLOGY, HISTORY, & CULTURAL RESOURCES	21
WILD & SCENIC RIVERS	2,828
WILDERNESS	1,235
ROADLESS AREAS	10,402
SOCIOECONOMIC (INCLUDING BUDGETS AND INDIAN RIGHTS)	6,892
PLANNING	3,610
FOREST MANAGEMENT	7,825
TOTAL COMMENTS BY GENERAL SUBJECT	90,549

Looking inside the general subjects in Table N-7, we see that 49 percent of the comments were directed at the following 11 subjects: timber harvest levels (7%), road closures and management (5%), multiple use (5%), ATV/OHV use (4%), snowmobiling (4%), development of the roadless areas (4%), comments on specific roadless areas (4%), big game in general (4%), number of livestock/grazing (4%), timber species mix (more ponderosa pine) (4%), and access to mineral areas or mines (4%). In addition, there are several subjects in Table N-7 which received less response than expected. These subjects include old growth areas; uneven-aged management, even-aged management, and clearcutting; big game numbers; water and riparian areas; reforestation; wildlife snag habitat; miles of road; and insect and disease control. Each of these subjects received less than 2 percent of the comments.

TABLE N-7

NUMBER OF COMMENTS BY SUBJECT

SUBCATEGORY	NUMBER OF COMMENTS
WATER - GENERAL	330
Water Quality	561
Water Quantity	239
Watersheds	920
Irrigation	81
Sedimentation	106
SOIL	151
Productivity	83
Erosion/Erosion Control	214
Compaction, Stability, Landslides	38
AIR	33
VEGETATION - GENERAL	249
Diversity	52
Noxious Weeds	46
Research Natural Areas	154
TIMBER RESOURCE - GENERAL	1,405
Harvest Levels	6,134
Reforestation	318
Sustained Yield	408
Departure	30
Below Cost Sales	289
Species Mix	3,316
Type Conversion	10
Land Suitability	126
Harvest Methods	327
Stand and Tree Improvement	67
Utilization Standards	81
Logging Systems	32
Yield Tables	45
Conversion Ratio	8
Inventories	38
Even-Aged Management	214
Uneven-Aged Management	477
Clearcutting	939
Timber Harvest Effects	977
Rotation Cycles	273
Timber Sales	401
Firewood	158

TABLE N-7 -- Continued

NUMBER OF COMMENTS BY SUBJECT

SUBCATEGORY	NUMBER OF COMMENTS
RANGE - GENERAL	443
Condition	64
Productivity	71
Permit Administration	122
Number of Livestock/Grazing	3,793
Forage Allocation	74
Other	257
WILDLIFE	1,105
Habitat	889
Snag Dependent Species/Dead and Down	74
Minimum Management Requirements (MMR's)	159
OLD GROWTH AREAS	531
Habitat	105
Lack of Old Growth Inventory	277
Retention of Old Growth	759
BIG GAME - GENERAL	3,601
Deer Numbers	162
Elk Numbers	569
Winter Range	287
Harrassment	109
THREATENED, ENDANGERED, AND SENSITIVE SPECIES	36
T&E & Sensitive Plants	80
T&E & Sensitive Animals	45
RIPARIAN AREAS	871
Timber Harvest in Riparian Areas	134
Roads in Riparian Areas	8
Grazing in Riparian Areas	154
Mining in Riparian Areas	22
FISH	416
Anadromous Fish	339
Resident Fish	86
Habitat Enhancement	98
Habitat	209
MINERALS & ENERGY	541
Access to Mineral Areas or Mines	3,435
Mineral Withdrawals	95
Probable Mineral Development	83
PROTECTION/LAW ENFORCEMENT/SAFETY	59
FIRE AND FUELS	181
PESTICIDES	78

TABLE N-7 -- Continued

NUMBER OF COMMENTS BY SUBJECT

SUBCATEGORY	NUMBER OF COMMENTS
INSECT AND DISEASE	165
TRANSPORTATION SYSTEM	201
Road Closures and Management	4,164
Road Maintenance Levels	29
Road Costs	77
Total Miles of Existing Roads	163
Total Miles of Planned Roads	108
Road Construction Design Standards	32
Effects of Road Construction/Reconstruction	1,267
LANDS & LAND USES	76
RECREATION - GENERAL	1,445
Motorized Recreation	251
Nonmotorized Recreation	84
RECREATION - DEVELOPED	378
RECREATION - DISPERSED	536
Trails	375
Hunting	545
ATV/OHV Use	3,758
Fishing	255
Camping	127
Hiking/Backpacking	263
Snowmobiling	3,258
VISUAL RESOURCES	340
SCENIC AREAS/SPECIAL INTEREST AREAS	138
ARCHEOLOGY & HISTORY/CULTURAL RESOURCES	21
WILD AND SCENIC RIVERS	769
Grande Ronde River	556
North Fork John Day River	570
Tucannon River	464
Wenaha River	469
WILDERNESS	1,179
North Fork John Day Wilderness	20
North Fork Umatilla Wilderness	6
Wenaha-Tucannon Wilderness	30
ROADLESS AREAS	1,232
Rehabilitation of Roaded Areas	28
Preservation of Existing Ones	2,005
Develop Roadless Areas	3,715
Specific Roadless Areas	3,422

TABLE N-7 -- Continued

NUMBER OF COMMENTS BY SUBJECT

SUBCATEGORY	NUMBER OF COMMENTS
ECONOMIC CONSIDERATIONS	1,863
Present Net Value	49
Receipts to the Counties	364
Receipts to the Forest Service/Federal Government	49
Economic Diversification	31
Personal Income	93
Employment and Job Security	1,263
Short-Term Economic Benefits	41
Long-Term Economic Benefits	131
Priced (Market, Nonmarket) & Nonpriced Benefits	34
Economic Stability	750
Commodity Production	225
Budget	25
SOCIAL CONSIDERATIONS	775
Lifestyles	64
Community Stability	215
Future Generations	586
INDIAN RIGHTS	32
Religious Freedom	6
Hunting-Fishing Rights	24
Gathering Rights	6
Grazing Rights	1
Coordination with the Tribes	25
FOREST COORDINATION	240
PLANNING OR PLAN DOCUMENTS	287
Specific Management Areas	2,307
Management Areas - General	63
Standards & Guidelines (Forest-wide)	219
Planning - Specific Items	363
Cumulative Effects	102
Monitoring	269
FOREST OR FOREST MANAGEMENT - GENERAL	2,068
Multiple Use	4,381
Use of Resources	444
Environment/Environmental Quality	462
Project Planning	55
Research (Needs)	117
Aesthetics/Amenities	173
Diversity/Biological Diversity	96
Facilities (in General)	29
TOTAL COMMENTS BY SUBJECT	90,599

SUMMARY OF PUBLIC PARTICIPATION ACTIVITIES

Following are the contacts made with various participants [publics] after the release of the draft Forest Plan and its EIS.

DATE	TYPE OF CONTACT	WHO CONTACTED	SUBJECT	PUBLIC INVOLVED	LOCATION
11/30/87	Open House	Local Citizens	Planning Concerns	31	Dayton, WA
12/01/87	Open House	Local Citizens	Planning Concerns	9	Pilot Rock, OR
12/01/87	Open House	Local Citizens	Planning Concerns	18	Troy, OR
12/01/87	Open House	Local Citizens	Planning Concerns	21	Heppner, OR
12/01/87	Briefing	Oregon State Agencies	Planning Concerns	25	Salem, OR
12/02/87	Open House	Local Citizens	Planning Concerns	15	Hermiston, OR
12/02/87	Open House	Local Citizens	Planning Concerns	18	Milton-Freewater, OR
12/02/87	Open House	Local Citizens	Planning Concerns	14	Pomeroy, WA
12/03/87	Open House	Local Citizens	Planning Concerns	17	Ukiah, OR
12/04/87	Open House	Local Citizens	Planning Concerns	24	Clarkston, WA
12/07/87	Open House	Local Citizens	Planning Concerns	8	Athena/ Weston, OR
12/08/87	Open House	Local Citizens	Planning Concerns	63	Walla Walla, WA
12/09/87	Open House	Local Citizens	Planning Concerns	28	La Grande, OR
12/10/87	Meeting	Columbia Basin Agricultural Research Ctr.	Planning Concerns	10	Pendleton, OR
12/10/87	Open House	Local Citizens	Planning Concerns	19	Long Creek, OR
12/14/87	Open House	Local Citizens	Planning Concerns	17	Tri-Cities, WA

DATE	TYPE OF CONTACT	WHO CONTACTED	SUBJECT	PUBLIC INVOLVED	LOCATION
12/15/87	Open House	Local Citizens	Planning Process	56	Pendleton, OR
12/16/87	Open House	Local Citizens	Planning Concerns	14	Elgin, OR
01/06/88	Open House	Local Citizens	Planning Concerns	28	Tollgate, OR
01/06/88	Briefing	Washington State Agencies	Planning Concerns	11	Olympia, WA
01/08/88	Meeting	Umatilla Timber Industry & Miners	Planning Concerns	22	Pendleton, OR
01/11/88	Briefing	EPA	Planning Concerns	3	Seattle, WA
01/12/88	Meeting	John Day Basin Council	Planning Concerns	17	Condon, OR
01/14/88	Meeting	Columbia Co. Motorcycle Club	Planning Concerns	20	Dayton, WA
01/14/88	Meeting	East End Rod & Gun Club	Walla Walla River Management Strategy	30	Milton-Freewater, OR
01/14/88	Open House	Local Citizens	Planning Concerns	21	Pendleton, OR
01/15/88 01/16/88	Meeting	Audubon Society	Planning Concerns	15	Walla Walla, WA
01/19/88	Meeting	Grant Co. Resource Council	Planning Concerns	10	John Day, OR
01/19/88	Meeting	Walla Walla Subbasin Citizens Committee	Walla Walla Watershed	16	Milton-Freewater, OR
01/20/88	Meeting	Grant Co. Court	Plan Economics	8	John Day, OR
01/21/88	Meeting	PGE	Planning Concerns	8	Boardman, OR

DATE	TYPE OF CONTACT	WHO CONTACTED	SUBJECT	PUBLIC INVOLVED	LOCATION
01/21/88	Meeting	Umatilla Sage Riders	Planning Concerns	50	Umatilla, OR
01/26/88	Meeting	ASCS, SWCD, SCS, Extension Service, Umatilla Co.	Planning Concerns	14	Pendleton, OR
01/26/88	Meeting	District 8 Advisory Board	Planning Concerns	10	Walla Walla, WA
01/28/88	Meeting	Umatilla Co. Planning Commission	Planning Concerns	13	Hermiston, OR
02/01/88	Meeting	Timber & Other Industry Reps.	Planning Concerns	22	Pendleton, OR
02/02/88	Meeting	Richland Rod & Gun Club	Planning Concerns	10	Richland, WA
02/05/88	Meeting	Steve Kadas of AOL	FORPLAN Runs	1	Pendleton, OR
02/09/88	Briefing	Heppner Chamber of Commerce	Timber Harvest & Watershed Effects	30	Heppner, OR
02/09/88	Meeting	Confederated Tribes of the Umatilla Indian Reservation	Planning Concerns	4	Mission, OR
02/10/88	Briefing & Workshop	Morrow County Court	Timber Sale Program Resource Coordination	4	Heppner, OR
02/11/88	Meeting	Backcountry Horsemen	Planning Concerns	25	Richland, WA
02/17/88	Informal Question & Answer	Heppner Economic Development	Timber Harvest, Recreation	6	Heppner, OR
02/17/88	Meeting	Spokane Chptr. Sierra Club	Planning Concerns	20	Spokane, WA
02/18/88	Community Meeting	Local Area Residents	Timber Management, Wildlife, & Watershed Values	110	Heppner, OR

DATE	TYPE OF CONTACT	WHO CONTACTED	SUBJECT	PUBLIC INVOLVED	LOCATION
02/23/88	Meeting	Rotary Club	Planning Concerns	6	Milton-Freewater, OR
03/03/88	Meeting	Morrow Co. Judge & Papineaus	Lands Adjacent to Cutsforth Park	3	Heppner, OR
03/08/88	Meeting	Umatilla & Blue Mtn. Forest Resource Councils	Planning Concerns	9	Walla Walla, WA
03/17/88	Meeting	Walla Walla Valley Horsemen	Planning Concerns	25	Walla Walla, WA
04/21/88	Meeting	Whitman Co. Sportsmen	Planning Concerns	20	Pullman, WA
05/02/88	Meeting	Pendleton Chamber of Commerce	Planning Concerns	5	Pendleton, OR
05/18/88	Meeting	Asotin Co. Sportsmen	Planning Concerns	15	Clarkston, WA
05/26/88	Meeting	Don Wilt of ODFW	Elk Habitat Model	1	Pendleton, OR
07/08/88	Meeting	Citizens Committee	Planning Concerns	11	Walla Walla, WA
07/21/88	Meeting	Citizens Committee	Planning Concerns	10	Walla Walla, WA
07/23/88	Field Trip	Local Citizens	Timber Management	30	Heppner, OR
07/29/88	Meeting	Citizens Committee	Planning Concerns	11	Walla Walla, WA
08/06/88	Meeting	Citizens Committee	Planning Concerns	10	Corporation GS
08/10/88	Meeting	Multiple-use Coalition	Silviculture Roadless Areas	4	Pendleton, OR
08/11/88	Meeting	Citizens Committee	Planning Concerns	11	Walla Walla, WA
08/12/88	Meeting	Citizens Committee	Roadless Areas	5	Pendleton, OR
08/14/88	Field Trip	Local Citizens	Planning Concerns	35	Heppner, OR

DATE	TYPE OF CONTACT	WHO CONTACTED	SUBJECT	PUBLIC INVOLVED	LOCATION
09/08/88 09/09/88	Meeting	Oregon State Wildlife Agencies, Timber Industry	Planning Concerns	24	La Grande, OR
09/20/88	Meeting	Local Citizens	Planning Concerns	30	Heppner, OR
09/26/88	Meeting	Citizens Committee	Planning Concerns	11	Pendleton, OR
09/27/88	Meeting	Local Citizens	Planning Concerns	30	Heppner, OR
09/29/88 09/30/88 10/01/88	Field Tour	Oregon and Washington State Agencies	Planning Concerns	15	Umatilla National Forest
10/04/88	Meeting	Local Citizens	Timber Effects	25	Heppner, OR
10/08/88	Field Trip	Local Citizens	Reforest-ation	10	Walla Walla RD
10/11/88	Meeting	Local Citizens	Planning Concerns	20	Heppner, OR
10/12/88	Meeting	Citizens Committee	Planning Concerns	9	Pendleton, OR
10/18/88	Meeting	Local Citizens	Management Areas	25	Heppner, OR
10/19/88	Meeting	Citizens Committee	Planning Concerns	6	Walla Walla, WA
10/24/88	Meeting	Local Citizens	Management Areas	20	Heppner, OR
10/25/88	Meeting	Water System Manager	Mill Creek RNA	1	Walla Walla, WA
10/31/88	Meeting	Local Citizens	Northface Areas	20	Heppner, OR
11/16/88	Meeting	ODFW & WDW N. Johnson	Planning Concerns	3	Pendleton, OR
11/21/88	Meeting	Citizens Committee	Planning Concerns	9	Walla Walla, WA
01/11/89	Meeting	Co. Weed Control Supervisors, Extension Service	Planning Concerns	54	Pilot Rock, OR

DATE	TYPE OF CONTACT	WHO CONTACTED	SUBJECT	PUBLIC INVOLVED	LOCATION
01/31/89	Meeting	Citizens Committee	Planning Concerns	12	La Grande, OR
02/11/89	Meeting	Citizens Committee	Planning Concerns	4	Walla Walla, WA
03/09/89	Meeting	East End Rod and Gun Club	F4 Strategy	14	Milton-Freewater, OR
03/10/89	Meeting	Millworkers Union	Planning Concerns	7	Walla Walla, WA
04/04/89	Meeting	State of OR N. Johnson K. Johnson	Planning Concerns	2	Pendleton, OR
04/05/89	Meeting	State of OR N. Johnson and Local Citizens	State Changes	18	Heppner, OR
05/12/89	Meeting	Citizens Committee	Planning Concerns	3	Walla Walla, WA
05/20/89	Meeting	Citizens Committee	Planning Concerns	10	Walla Walla, WA
05/25/89	Meeting	Citizen's Committee	Planning Concerns	12	Walla Walla, WA
08/14/89	Meeting	Local Citizens	Planning Concerns	8	Heppner, OR
10/16/89	Meeting	Citizens Committee	Planning Concerns	7	Walla Walla, WA
11/07/89	Meeting	Citizens Committee	Planning Concerns	3	Walla Walla, WA
01/12/90	Meeting	Citizens for Multiple Use	Expected Final Plan	9	La Grande, OR
01/13/90	Meeting	Citizens Committee	Planning Concerns	6	Walla Walla, WA
01/22/90	Meeting	Nick Ashmore Aide to U.S. Rep. Foley	Expected Final Plan	1	Pendleton, OR
01/29/90	Meeting	Mike Salsgiver Aide to U S. Senator Hatfield	Expected Final Plan	1	Pendleton, OR
02/02/90	Meeting	E. OR Mining Assn, Inc. - Bill Roesch and George Ziermann	Expected Final Plan	2	Baker City, OR

DATE	TYPE OF CONTACT	WHO CONTACTED	SUBJECT	PUBLIC INVOLVED	LOCATION
02/03/90	Meeting	Citizens Committee	Planning Concerns	7	Walla Walla, WA
02/12/90	Meeting	CTUIR	Expected Final Plan	12	Umatilla Indian Reservation
02/15/90	Meeting	Timber Industry Representatives	Expected Final Plan	11	Pendleton, OR
02/21/90	Meeting	Oregon Rivers Council David Bayles	Expected Final Plan	1	Portland, OR
02/21/90	Meeting	Nat'l Wildlife Federation - Rick Brown Wilderness Soc. Bob Freimark	Expected Final Plan	2	Portland, OR
02/22/90	Meeting	Columbia River Inter-Tribal Fish Commission John Rhodes CTUIR - Rick George	Expected Final Plan	2	Pendleton, OR
02/22/90	Meeting	Umatilla Forest Resource Group	Expected Final Plan	5	Walla Walla, WA
03/01/90	Meeting	Nature Conservancy - Dick Vander Schaaf	Expected Final Plan	1	Bend, OR
03/02/90	Meeting	ONRC - Tim Lillebo	Expected Final Plan	1	Bend, OR
03/15/90	Meeting	Environmental organizations of Seattle, WA	Expected Final Plan	5	Seattle, WA

RESPONDENTS TO THE UMATILLA NATIONAL FOREST DRAFT FOREST PLAN

AGENCIES

ASOTIN COUNTY BOARD OF COMMISSIONERS

BAKER CITY/COUNTY ECONOMIC DEVELOPMENT DEPT

BAKER COUNTY COURT

PORT OF CLARKSTON

COLUMBIA COUNTY BOARD OF COMMISSIONERS

EAST CENTRAL OREGON ASSOCIATION OF COUNTIES

GARFIELD COUNTY BOARD OF COMMISSIONERS

GRANT COUNTY COURT

GRANT SOIL & WATER CONSERVATION DISTRICT

CITY OF GREENHORN

CITY OF MILTON-FREEWATER

MONUMENT SOIL & WATER CONSERVATION DISTRICT

MORROW CO. SOIL & WATER CONSERVATION DIST.

NORTHWEST POWER PLANNING COUNCIL

OREGON STATE DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION, REGION 5

OREGON STATE GOVERNOR

CITY OF PENDLETON

UMATILLA COUNTY BOARD OF COMMISSIONERS

UMATILLA COUNTY PLANNING DEPARTMENT

UMATILLA CO. SOIL & WATER CONSERVATION DIST

UMATILLA COUNTY WEED CONTROL

UNION COUNTY COURT

USDA FOREST SERVICE, FORESTRY & RANGE SCIENCES LABORATORY

USDA PACIFIC NORTHWEST RESEARCH STATION, FORESTRY SCIENCES LABORATORY

USDI FISH & WILDLIFE SERVICE

USDI OFFICE OF ENVIRONMENTAL PROJ REVIEW

U S DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, REGION 10

U S DEPARTMENT OF TRANSPORTATION, RESEARCH & SPECIAL PROGRAM ADMINISTRATION

U S ENVIRONMENTAL PROTECTION AGENCY, REGION 10

WAITSBURG-COPPEI FLOOD CONTROL DISTRICT

CITY OF WALLA WALLA

WALLA WALLA COUNTY REGIONAL PLANNING

WASHINGTON STATE DEPARTMENT OF WILDLIFE

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION DISTRICT 5

WASHINGTON STATE GOVERNOR

WHITMAN COUNTY BOARD OF COMMISSIONERS

PORT OF WHITMAN COUNTY

INDIAN TRIBAL GOVERNMENTS

COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION

CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION

NEZ PERCE TRIBAL EXECUTIVE COMMITTEE

ORGANIZATIONS

AMERICAN FISHERIES SOCIETY, OREGON CHAPTER

AMERICAN RIVERS

ARNOLD-THOMAS SEED SERVICE, INC.

ASOTIN COUNTY CATTLEMEN

ASSOCIATED OREGON LOGGERS, INC

BACKCOUNTRY HORSEMEN OF WASHINGTON

BEARING & INDUSTRIAL SALES, INC

GUY BENNETT LUMBER CO

BHA GROUP, INC.

BLUE MOUNTAIN ARCHERS

BLUE MOUNTAIN AUDUBON SOCIETY

BLUE MT. FOREST PRODUCTS, INC

BLUE MT GROWERS, INC

BOISE CASCADE, TIMBER & WOOD PRODUCTS GROUP, NORTHEAST OREGON REGION

EARL E BROWN & SONS, INC

BROWNING LOGGING CO.

CASCADE WOOD COMPONENTS, INC.

CHAMPION FRICTION CO

CITIZENS FOR MULTIPLE USE & RESOURCE CONSERVATION

C & J TRUCKING

RICHARD L. CLARK LOGGING, INC

CLARKSTON CHAMBER OF COMMERCE

C & M FARM SUPPLY, INC

COE/GARTON FARMING

COE MANUFACTURING CO

COLUMBIA COUNTY MOTORCYCLE CLUB

COLVIN CATTLE CO , INC

CORSMITH

DENLINGER, INC

DIER LUMBER CO

WM M. DOUGHERTY LOGGING, INC

EAST END ROD & GUN CLUB

EASTERN OREGON MINING ASSOCIATION, INC.

ELGIN CHAMBER OF COMMERCE

ELLINGSON LUMBER CO

E W. DIRT RIDERS ASSOCIATION

FAMILIAN NW

FRIENDS OF THE EARTH

A E GOMBERT LUMBER CO , INC

GRANDE RONDE RESOURCE COUNCIL, INC.

GRANT COUNTY RESOURCE COUNCIL

GUIDO LUMBER CO , INC

HELLS CANYON GUIDE SERVICE, INC.

HEPPNER CHAMBER OF COMMERCE

HONDA YAMAHA CYCLETOWN

INLAND EMPIRE PUBLIC LANDS COUNCIL

INLAND NORTHWEST WILDLIFE COUNCIL

INTER-MOUNTAIN ALPINE CLUB

IZAAK WALTON LEAGUE, OREGON DIVISION, PUBLIC LANDS RESTORATION TASK FORCE

JEFFERSON AUTOMOTIVE

JOHN DAY BASIN COUNCIL

KINZUA CORP.

KOLBE & KOLBE MILLWORK CO

LA GRANDE INDUSTRIAL DEVELOPMENT CORP

LAKE PENLAND CORP.

LEWIS CLARK ECONOMIC DEVELOPMENT CORP

LEWISTON CHAMBER OF COMMERCE

LITTLE WALLA WALLA RIVER IRRIGATION UNION, INC

LOUISIANA-PACIFIC CORP

LOWER COLUMBER BASIN AUDUBON SOCIETY

LPIW LUMBER & SAWMILL WORKERS UNION LOCAL 2798

MAZAMAS

THE MCGINNIS LUMBER CO , INC.

MILTON-FREEWATER CHAMBER OF COMMERCE, AGRIBUSINESS COMMITTEE

MORROW COUNTY GRAIN GROWERS, INC

MORROW COUNTY LIVESTOCK GROWERS ASSOC.

MORROW COUNTY PRIVATE WOODLANDS ASSOC.

MOSER LUMBER, INC

MOSS ADAMS

NATIONAL COUNCIL OF THE PAPER INDUSTRY FOR AIR & STREAM IMPROVEMENT, INC., WEST COAST REGIONAL CENTER

NATIVE PLANT SOCIETY OF OREGON, BLUE MOUNTAIN CHAPTER

NATIVE PLANT SOCIETY OF OREGON, CONSERVATION COMMITTEE

THE NATURE CONSERVANCY, OREGON FIELD OFFICE

THE NATURE CONSERVANCY, WASHINGTON FIELD OFFICE

NELSON REAL ESTATE, INC.

NORTHWEST FORESTRY ASSOCIATION

NORTHWEST TIMBER WORKERS RESOURCE COUNCIL LOCAL 2851

NORTHWEST TRAILRIDERS ASSOCIATION

OBSIDIANS, INC , CONSERVATION COMMITTEE

OREGON HUNTER'S ASSOCIATION

OREGON NATURAL RESOURCES COUNCIL

THE OREGON RIVERS COUNCIL

OREGON STATE SNOWMOBILE ASSOC , INC , LEGAL ACTION COMMITTEE

OUR NATIONAL FOREST, INC

PACIFIC POWER & LIGHT CO

R D. MAC, INC

RICHLAND ROD & GUN CLUB

ROGGE LUMBER CO

ROLOFF BROS., INC

ROLOFF FARMS, INC

SAVE THE WALLA WALLA WATERSHED, INC

SIERRA CLUB, BLUE MOUNTAIN GROUP

SKI BLUEWOOD

SKYLINE SNOWMOBILE CLUB

SOS COMMITTEE

SPOKANE MOUNTAINEERS

SPOUT SPRINGS RECREATION ASSOCIATION

TRI-STATE STEELHEADERS

TROUT UNLIMITED, COLUMBIA RIVER CHAPTER

TROUT UNLIMITED OF OREGON

UMATILLA COUNTY CATTLEMEN'S ASSOCIATION

UMATILLA SAGE RIDERS

UNION COUNTY ECONOMIC DEVELOPMENT CORP.

UNITED 4WD ASSOCIATIONS LAND USE TEAM

VERNUM EQUIPMENT MANUFACTURING CO.

WALDROM FOREST PRODUCTS, INC.

WALLA WALLA VALLEY HORSEMEN

WASHINGTON CATTLEMEN'S ASSOCIATION

WASHINGTON STATE SNOWMOBILE ASSOCIATION

WASHINGTON WILDERNESS COALITION

WESTERN FOREST INDUSTRIES ASSOCIATION

WHITMAN COUNTY CATTLEMEN

WHITMAN COUNTY SPORTSMEN'S ASSOCIATION

WOMEN'S OREGON TRAIL RIDERS

ZACHARIAS LOGGING

INDIVIDUALS

JOE ABBE
CONSTANCE M ABELL
GARRY Z. ACCROFT
THOMAS A ADAIR
CLIFFORD R ADAMS
DENNY ADAMS
EDITH M. ADAMS
FRED L ADAMS
J R ADAMS
JAMES LEE ADAMS
JOYCE ADAMS
LINDA ADAMS
ODELL ADAMS
PATRICIA RAE ADAMS
SELMA ADAMS
TAMMY ADAMS
THOMAS H ADAMS
CLAUDIA ADDINGTON
MIKE ADDINGTON
SAM ADDISON
ELLY ADELMAN
DALE ADLUND
BOB AEGERTER
MARY ANN AGUERO
ARDELL AINSWORTH
BEN G AIRHART
JANELLE AKIN
JAMES T AKIYAMA
WADE ALBISH
RONALD W ALBISTON
ARNOLD J. ALBRECKT
CHARLOTTE ALBRIGHT
STAN M ALDOUR
ETHEL ALDRICH
HARRY ALEXANDER
JAN ALEXANDER
WILBER ALFORD
JAMES B. ALLAN
BOYD ALLEN
DARRELL ALLEN
JUDITH A. ALLEN
L. HARDY ALLEN
REX ALLEN
JON L ALLISON
OREN G ALLISON
WILLIAM M ALSUP
ORVILLE L ALTENEDER
LOIS ALTERGOTT
JIM ALZHEIMER
GERALD C. AMBLER
JERRY R AMBROSE
KATHRYN L AMERY
CHARLES T AMES, D O
DEBRA AMON
SCOTT AMON
ALEIDA ANDERSON
ASHLEY ANDERSON
BILLIE ANDERSON
BRAD ANDERSON
CHRISTINE ANDERSON
CHUCK ANDERSON, SR
DANIEL ANDERSON
DON E ANDERSON
ED ANDERSON
EDWARD F ANDERSON, PH D
FRANK ANDERSON
FRANK D ANDERSON
HAROLD E ANDERSON
JACK E ANDERSON
MARC W ANDERSON
MEG ANDERSON
LARRY D ANDERSON
PATRICIA A ANDERSON
R R ANDERSON
RANDI ANDERSON
ROBERT ANDERSON
RODNEY L ANDERSON
SANDI ANDERSON
STEVE ANDERSON
TAD L & CINDY R ANDERSON
TONY ANDERSON
JOHN ANDREAS
EDWIN ANDRUS
RONALD W ANGEL, M D
JIMMYE E ANGELL, PH.D.
DOUGLAS P ANSOTEGUI
LELAND ANSOTEGUI
TILLMAN ANSPACH
M. E ANTHONY
BARBARA APPLE
LYNN N APPLE
PENNY APPLETON
JOE ARAGUN
ALBERT ARBOGAST
BOBBIE ARBOGAST
BRUCE ARBOGAST
DON ARBOGAST
DONALD R ARBOGAST
EVELYN ARBOGAST
HAL ARBOGAST
MICHAEL ARBOGAST
NORVEL ARBOGAST
ORVAL ARBOGAST
WILLIAM ARBOGAST
DAVID B ARMSTRONG
JUDI ARMSTRONG
DWIGHT C ARNOLD
SANDY ARNOT
PAUL ARRINGTON
RICHARD ARTE
DAN ASCHENBRENNER
WILLIAM L. ASH
KEVIN ASHBY
CAROL A. ASHER
GOLDIE ASHER
H JOHN ASHER
PHILIP A ATKINS
COLLEEN ATKINSON
GLORIA JEAN ATKINSON
JOHN P ATKINSON
LAINE ATKINSON
TED ATKINSON
JEFF AUTTMAN
ALLAN F AVERY
BILLY D AYERS
BARBARA BACH
JAMES BACH
PATTIE BACHMANN
GERALD L. BACON
KENNETH J BACON
LOIS A BACON
RHODA L BACON
HELEN BACUS
STEELE BACUS
WILLIAM BACUS
DALE A BAILEY
DWIGHT BAILEY
FRANK BAILEY
GREGG BAILEY
KAEDENE BAILEY
KENNETH W BAILEY
KURT BAILEY
MARY A BAILEY
NEOMA BAILEY
RIC BAILEY
ROBERT L BAILEY
DICK BAINES
BETTY BAIRD
GARY BAIRD
M J BAIRD
VERN S. BAISLEY
BARBARA BAKER
DALE W. BAKER
JERRY BAKER
JERRY BAKER
PATRICK E BAKER
ROGER BAKER
STEPHEN P BAKER
WILLIAM BAKER
J E BALDI
C. A BALDWIN
CECIL F BALDWIN
DANIEL A BALDWIN
PENNY BALDWIN
WILLIAM B BALFOUR
BERNADINE BALL
FRANKLIN BALL
GARY O BALL
GEORGE H BALL
HAROLD R BALL
LEON E BALL
LEON J. & SHARON BALL
STEVEN K. BALL
TONY BALL
D ROGER BALLANTYNE
GEORGIA BALLANTYNE
TOM BALLANTYNE
JO BALST
DON BARBER
JUDY BARBER
KENNETH G BARBER
GUST BARDY
LORENE BARDY
RUTH BAREMORE
JEAN L. BARER
THERESA Y. BARILA
JOHN W BARKER
RAYMOND L BARKER
P BARNELL
JAMES J BARNES
MELINDA K. BARNES
NICHOLAS P BARNES
RAYMOND A. BARNES
JOHN P BARNETT
PHILIP M BARNEY
MELVIN L BARRET
JAMES A BARRETT
RONALD G BARRETT
KATHERINE BARRMORE
DAVID E BARRY
PETER BARRY
ROBERT W BARTER
JOHN K BARTH
CRAIG T BARTLETT
GRACE BARTLETT
E R BARTON
NORMAN BARTON

HAROLD BARTSCH
T C BASCOM
VESTA BASCOM
MICHAEL BASS
MARSHA D BASTIAN
REED A BASTIAN
ROBERTA BATES
JIM BAUER
NEIL BAUER
MELVIN BAULNE
RAYMOND BAUM
KIM BAUMAN
EDGAR BAUMANN
HAROLD BAUMSTAD
JERALD D BAYER
DARROLL BAYLINK
SUSAN BAYSINGER
JOE BEAN
L H BEAN
MARVIN F & MRS BEAN
DOROTHY BEARD
ALLEN E. BEAUDRY
ANDAS BECHTEL
MARY BECHTEL
DALE BECK
DOUGLAS R BECK
SUSAN BECK
TOM L. BECK
RICHARD BECKER
ROY BEER
KEVIN BEERS
DR HAROLD O BEGGS
GWEN BEIER
HERBERT H BEIER
DENNIS BEJER
DANNY R BELL, JR
ELVYN E. BELL
KEVIN BELL
LARRY D BELL
TERRI BELL
AURORA BENESH
CHERYL BENGARD
RON BENINTENDI
TIMOTHY G. BENINTENDI
CRAIG BENNETT
DAN BENNETT
EDGAR J BENNETT
EVERETT C. BENNETT
FANNY C BENNETT
FRED BENNETT
GLENDA BENNETT
JANICE BENNETT
JOHN B. BENNETT
KAREN BENNETT
PAUL BENNETT
ROBERT D BENNETT
THERON BENNETT
VERNON BENNETT
WAYNE F BENTON
MARY E BENZ
ALLIS BERFORD
D P. BERG
DANIEL P BERG, JR
DOLORES K. BERG
KERRY D BERGAN
ROBERT H BERGEN
ERIC G J. BERGMAN
DAVID BERKE
JOSEPH H. BERNARD
RICHARD BERNARD
JAMES T & BERTHA BERRY
STACY L BERUDAL
GEORGE A BETTAS
DAVID BEUKE
ROBERT BIER
E E BIGGERSTAFF
GLADYS BIGGERSTAFF
ROBERT K. BIHART
ROBERT D BILES
GENE BILSHAW
GARY D BINDER
RUSSELL BINGAMAN
DELBERT BINSCHUS
NOLA BINSCHUS
HAROLD BIRCHER
GAIL R BIRDSONG
THERESE M BIRDSONG
RONNY L BISBON
D W BISHOP
DAN A BISHOP
DARREL BISHOP
RALPH BISHOP
JIM B BISSET
JULES F BITTNER, M D
BRENDA BLACKMAN
C. D BLACKSHIRE
MRS C. D BLACKSHIRE
EARL BLAKE
FRANK BLAKE
HELEN BLAKE
K. L. BLAKE
LARRY BLAKELEE
SHIRLEY BLAKELY
WALLY BLAKELY
LONNIE J. BLANCHAU
JOHN BLANCHET
JUNE A BLAND
ROBERT BLANFORD
D E. BLANKENSHIP
MRS. D E BLANKENSHIP
BETTY A BLAYLOCK
CLARENCE L BLAYLOCK
JOHN W BLEDSOE
JACK C BLEWETT
MANTIN H. BLIEFERNICH
RANCE BLOCK
ROD BLOCK
S BLOOM
WILLIAM E BLOOR
ALICE P. BLOSSOM
LELAND BLOWS
LAWRENCE BOATLS
DAVID BOBO
CRAIG G BODEWIG
DON BODEWIG
LAWRENCE BOE
ARTHUR BOESCHEN
KENNETH A BOETTCHER
STEVE BOGART
MICHAEL BOHANNON
SHANE BOHNENKUMP
HARV C. BOHNHOF
CHARLES BONANDO
DOROTHY BONIFER
ROBERTA BONNALIE
RUSSELL BONNALIE
JIMMY BOOKER
DONALD W BOOTH
DORIS L BOOTH
GREG BOOTH
JOAN BOOTH
ROY H BOOTH, SR
REV YVONNE BOOTH
ROBERT L BOPP
IRWIN H. BORK
JAMES W BOROWITZ
MICHAEL A BORYSEWICZ
LARRY BOSSENT
DELBERT J BOSWORTH
ROB BOTEFUHR
BRADY BOTTS
CASSANDRA R BOTTS
DENNIS L BOTTS
RONALD G BOTTS
ED A BOTZ
C G BOUCHER
GARRY A BOUCHER
JOHN G BOULTON
WAYNE BOUME
ARNOLD BOUNEY
JOHN BOWERS
HELEN M. BOWMAN
RON BOWMAN
SHARON BOWMAN
ANDREW BOYDOTE
ANDREW P BOYER
JOHN BOYER
MARVIN L BOYLE
MIKE BOYLEN
RICK BOYLEN
DAN BRADEN
GLENN W BRADLEY
DIANA BRADSHAW
GARY R BRADY
RONALD W. BRADY
JAY BRAHE
JOHN W. BRAMLET
PHYLLIS J BRANDT
RUSS BRANNEN
BOB BRANSCUM
LYNN BRASSARD
RICHARD L BRATHOVDE
JOHN BRAUGHTON
LISA BRAUGHTON
KALMAN BRAUNER
FRED BREEDING
MIKE L. BREENER
CARRIE BREHAUT
MELVIN BREMER, JR.
JOHN L. BRENNER
DOROTHY M BRETTHAUER
MILTON E BRETTHAUER
BRUCE BREWER
HAROLD J BREWER
JEANNE BREWER
BOYD BRILL
BOB BRINCKERHOFF
MARJORIE BRINEY
TERRENCE BRINHALL
K. R BRIO
ELLEN BRISBOIS
JOHN L. BRISBOIS
JOANN D BRITAIN
LANCE BRITAIN
J. DAVID BRITON
ARMOND BRITT
BENITA L BRITT

CAMIE BRITT
CAROLYN M BRITT
CLAUDE BRITT
DIANA R BRITT
ELVIN BRITT
JOHN BRITT
KATHERINE M BRITT
LEROY BRITT
MARIE BRITT
MARVIN BRITT
PAULINE BRITT
R R BRITT
RICHARD E BRITT
RICK BRITT
ROCKY BRITT
ROD BRITT
ROY H BRITT
RUSSELL BRITT
SHELLI L. BRITT
STAN BRITT
TONY BRITT
GEORGE C BRITTON
MARY ANN BROADFOOT
RONALD W BROADFOOT
WILLIAM P. BRODERICK
DEE BRONNER
DONALD E BRONSON
JANICE BRONSON
WAYNE R BRONSON
HURLEY BROOK
JOE BROOKE
ORLEN MAE BROOKS
BERYL BROOKSHIRE
EDDIE BROSNAN
GLORIA A BROTHERS
SAMUEL A BROTHERS
KRISTINE BROTHERTON
DAVID J BROWILL
AMOS W. BROWN
BILLY W BROWN
CHARLES BROWN
DENNIS T BROWN
DONNA BROWN
HOLLIS C BROWN
LENNIS A. BROWN, SR
MARLENE BROWN
MARY A BROWN
MICHAEL BROWN
NAOMI W BROWN
RICKY BROWN
ROGER BROWN
SCOTT BROWN
STEVE BROWN
W R BROWN
R K. BROWNING
ROBERT BRUCE
THOMAS E. BRUCE
LAURIE BRUCKNER
JAMES BRUMMITT
CHRISTOPHER BRUN
DENNIS BRUNNER
BERNADINE BRYANT
GARY BRYANT
JAMES BUCHANAN
HAROLD BUERSTATTE
JANET W BUETTNER
MAEDELLA BUFFINGTON
ROLAND F. BUGLES
RICHARD BUHEUR
CLYDE BUHRMAN
ROBERT C BULL
RANDOLPH W BUNCE
JAMES R BUNCH
THOMAS T BUNCH
DELBERT R BUNKER
PAUL BURACZYNSKI
RICHARD BURCH
THOMAS J BURCH
CHRIS BURDEN
G L. BURDEN
DORIN D. BUREHAM
SCOTT BURGESS
SHELLEY BURGESS
SCOTT B. BURIGHT
KELLY G BURKE
BURTON B BURKHART
F M BURNETT
LILA BURNETT
LOIS BURNETT
ROBERT BURNETT
FRED & JACQUELINE BURNETTE
JAMES J BURNS
JAMES M BURNS
NICK BURNUM
FRANK BURRES
SCOTT B BURRIGHT
NICK BURUSE
HAROLD J & EVA J. BUSCH
J B. BUSCHKE
JOE BUSH
MONICA BUTCHER
KEVIN BUTLER
MARK BUTTERFIELD
GEORGE D BUYLTON
WILLIAM BYERS
POLLY B CADD
CONNIE G CADOTTE
JOYCE A CADWELL
LARRY CADWELL
JAMES L CAGLEY
JANET CAHILL
WILLIAM CAHILL
DONALD V CAIRNS
RUTH CALBY
ED L CALDER
H J. CALDER
OPAL E. CALDER
RON G. CALDER
BOB CALHOUN
LAINE CALLAHAN
TOM CALLAHAN
CHERYL CALLAWAY
BETTY CAMERON
KEITH CAMERON
L. C. CAMERON
LINDA M CAMERON
RON CAMERON
ARLET A. CAMPBELL
BONITA CAMPBELL
DEBORAH K. CAMPBELL
DONNA CAMPBELL
FLO E CAMPBELL
GENE CAMPBELL
JOHN A CAMPBELL
KEVIN CAMPBELL
KEVIN M. CAMPBELL
LESTER CAMPBELL
MARY A CAMPBELL
MARVIN L. CASSIDY
PATRICK T CASSIDY
ROBERT G CASTER
SARA CATE
CLIFFORD D CATLETT
DOROTHY M CATLETT
ERNEST LEE CAUD
HENRY T CAVALLO
WILLIS A CAWLEY, JR
BARBARA L CECH
JAMES A CECH, SR.
LARRY CECIL
LAVELLE CECIL
VERNON E CECIL
DON CELLERS
DOTTIE CELLERS
DAN CENIGA
WAYNE ALBERT CHABIL
STEVE P CHADEK
LYLE C CHADWICK
MARK CHADWICK
MICHAEL A CHADWICK
REBECCA J. CHAFFEE
LELAND R CHAMBERS
MARVIN CHAMPOUX
CLARENCE D CHANDLER
DERRILL CHANDLER
WILLIAM CHANDLER
WM T CHANDLER
HERMAN CHANEY
SAM CHAPIN
STUART CHAPIN
ANNA M CHAPMAN
CRYSTAL CHAPMAN
DAVE CHAPMAN
DAVID L. CHAPMAN
GORDON CHAPMAN
GRANT CHAPMAN
LORENA CHAPMAN
WILLIAM CHAPMAN
ANNE L. CHARNLEY
ALLEN R CHASE
C E CHASE
MARY ELLEN CHASE
RAY W CHASE
MARLENE CHEESMAN
RICK L CHEESMAN
ELY CHERTOK
ED CHESNUT
LEE D CHESTER
CHUNG K. CHEUNG
A DAVID CHILDS
JUDI D. CHILLQUIST
ARLIENE JOYCE CHISM
DARREN CHITWOOD
DOUG CHITWOOD
HAROLD CHITWOOD
CHARLES D CHREESOSKIE
BILL CHRISTENSEN
DONNA CHRISTENSEN
HARRY CHRISTENSEN
IRIS CHRISTENSEN
LENNIS CHRISTENSEN
RENA CHRISTENSEN
WENDY CHRISTENSEN
BOB CHRISTIAN
RICHARD CHRISTIANSEN
CARL CHRISTIANSON
RONALD E CHRISTISON

KEN CHRUSOSKIE
SANDRA CHURCH
TOM F CHURCH
BENNIE CIMMIYOTI
HAL S. CLAPSHAW
BARBARA CLARK
BARTON E CLARK
BRIAN CLARK
CHRIS J CLARK
DALE CLARK
ELIZABETH I CLARK
GUNTHER CLARK
HERB CLARK
JERRY J CLARK
NED E. CLARK
RICHARD L. CLARK
BARBARA A CLARKE
JOHN J. CLARKE
ROSALIND CLARKE
MARLIN CLAUSNER
CLARENCE CLAYPOOL
ROYCE E. CLEAVER
DAVID E CLEGG
ORETTA M CLEGG
ROBERT E. CLEGG
RON CLEGG
ROSELYN CLEGG
DAVE E CLERRY
FRED C. CLINTON
A. J. CLONINGER, JR
ROSE CLONINGER
LUCKY COAL
JERRY COALWELL
DANIEL R COBURN
CLIFFORD H. COCHRAN
JOHN COCHRAN
GEORGE & EVELYN COCKBURN
ROBERT M. CODDING
ANITA L. CODY
ROBERT L. CODY
DR SHELIA COE
RAY COE
TIM COE
LOUIS L COELHO
JUDY COHEN
DARCY COIL
D R COINER
CARLA S. COLCLESSER
DICK COLCLESSER
CARL D. COLE
CAROL A. COLE
JOHN G COLE
JOHN L. COLE
NORRIS COLE
RAYMOND G COLE
RICHARD A COLE
SHARLENE A COLE
STEVEN L. COLE
WILLIAM C. COLE
DOUG COLEMAN
SUSAN COLEMAN
TIMOTHY COLEMAN
WILLIAM R COLEMAN
NOUIN M COLES
STEVEN M COLES
G R. COLKITT
LINDA COLLIER
JOHN A COLLIN
W T COLLINGWOOD
BLANCHE COLLINS
BRIAN COLLINS
COREY COLLINS
IKE COLLINS
JERRY D COLLINS
LARRY COLLINS
LARRY COLLINS
LERRINA A COLLINS
LYNN W COLLINS
L. REYBURN COLLIS, M D
WILLIAM S. COLPITTS
BILL COLVIN
JOYCE COLVIN
BRUCE COLWELL
JOYCE F COLWELL
BARBARA J COMBS
RICK COMBS
TRACY A. COMBS
BRUCE J. COMO
RICHARD W. CONGREVE
MIKE CONLEY
DOUGLAS A CONNER
KELLY CONNER
LEVI N CONNER
MIKE CONNERY
T. TOSH CONNOR
TOM CONNOR
JOSEPH P. CONTESTABILE
BETTY J COOK
DON COOK
DORRIS R. COOK
GORDON COOK
JACK L. COOK
JEANE COOK
MARY J. COOK
T. BRUCE COOK
TERRY COOK
WAYNE L. COOK
JOANN COOK HICKS
CRAIG COOKINGHAM
DONALD E. COOMBES
EDWARD D COOMBES
ELSIE V COOMBES
BILLY COONE
RON D COONE
RUTHIE COONE
GLENN H COOPER
M D. COOPER
NEIL COOPER
ROMAIN COOPER
BUD COPELAND
EDNA JEAN COPELAND
JOE COPELAND
S. R. COPELAND
TONY COPELAND
DONALD J COPPIN
DONNA R CORBETT
NOELLE CORBIN
WILLIE CORECTOR
LOUIS CORLEY
MICHAEL W CORLEY
DEBORAH CORNETT
JERRY CORNETT
JOHN E. CORREA
CAROLYN NELSON CORVINO
CHRISTY CORWIN
LEONARD M CORWIN
MARIE CORWIN
TIM CORWIN
TIM W H. CORWIN
SHERRILL COSSITT
STEVE COSSITT
A. LUANNE COSTER
M C COTTON
DAVID S. COVERT
M E COVERT
CURTIS COX
DENNIS L. COX
DUNCAN COX
EDD COX
JAMES B COX
LA VERDA & CARL COX
PAULINE COX
RAYMOND COX
RICK COX
ROBERT A COX
ROBERT C. COX
SUSAN E COX
W FRED COX
JOHN H. COY
RUTH A COY
DAVID M. CRABTREE
LESLIE CRADDOCK
RANDY CRADDOCK
STACI CRADDOCK
TED CRADDOCK
RICHARD L. CRAM
FRED C CRAMPTON
SHARON CRAMPTON
JOHN O. CRASS
LARRIE CRAVEN
STEPHEN CRAVEN
ALENA CRAWFORD
DON L. CRAWFORD
EMORY CRAWFORD
KELI R. CRAWFORD
RONALD CRAWFORD
KAREN CRENSHAW
D. CREST
FLOSSIE CREWS
CHRIS CRIBB
CLAIRE CRIBB
L. CRIBB
MIKE CRIBB
SHIRLEY CRIBB
VIRGIL D CRIBB
MARSHALL CROCKER
MARVIN R. CROCKER
MELANIE CROCKER
RALPH O. CROCKER
TONY CROCKER
DAVID B. CROLEET
KATHY L. CROSS
RAYMOND CROSS
N. W. CROUCHER, SR.
DOUGLAS CROW
FRANCES CROW
EMERY CROWLEY
ANNA B CRUMP
CHARLES H. CRUMP
DANIEL L. CRUMP
ROLLAN A CRUMP
ARLENE CULVER
EARL L. CULVER
LAWRANCE L. CULVER
REX CULVER
DAVE & KAYE CUMMINGS
ALLEN W CURL

DWIGHT CURRAN
LAWRENCE R CURRY
PAUL M CURTIS
FRITZ CUTSFORTH
JEFF CUTSFORTH
JOHN & TERRY CZARNECKI
ALTA DAGGETT
BEE DAGGETT
CHRIS K. DAGGETT
DIANE M. DAGGETT
VERNON M DAGGETT
LEIF O DAHL
NORMAN DAHL
ALAN DALE
DIANE C. DALEY
GEORGIA R DALLMAN
DEBBIE DALTON
RICHARD D DALTON
ROBBY S DALTON
GORDON DAMES
PATRICK DAMON, SR
HOWARD DANA
GENE DANIEL
DAVID G DANIELS
A H DANIELSON
KAY DANIELSON
ROCHELLE DANIELSON
TOM DARNELL
DARCY DAUBLE
DENNIS D DAUBLE
PRISCILLA DAUBLE
B. DAUCSANAJI
D. WAYNE DAVIDSON
E L DAVIDSON
EDITH A DAVIDSON
JEROME G. DAVIES
ALAN DAVIS
BENJAMIN T. DAVIS
ED DAVIS
JAMES E. DAVIS
JEFF DAVIS
LOU DAVIS
MARY ANN DAVIS
RICK DAVIS
ROBERT L DAVIS
ROBIN L. DAVIS
TED DAVIS
TODD DAVIS
VIRGIL DAVIS
MARVIN & CARMEN DAWSON
BYRON J DAY
TROY DAY
A & LYNN DE LA MAZA
ORVILLE DE LAY
EDIE DE NIRO
ELIZABETH A DE NIRO
DENNIS DE VANEY
JANET DE WAAL
WILLIAM DE WAAL
DAVID DEAL
TOM DEAL
ALAN R DEARDORFF
J B DEBEOECK
RALPH W DEBOLR
GRETCHEN & MICHAEL DEGRASSE
FLORIAN E DEJEAN
JULIE M DELAPP
MICHAEL T DELAPP
DAN DELASHMUTD
JOE DELCURTO
ELOIS E DEMARAY
JAMES H DEMPSEY
BILL DEMSEY
KATI DENIRO
LAWSON R DENNY
MERRY LYNN DENNY
MIKE DENNY
DAVID W DENTON
STACY J DENTON
HOWARD DEPRIEST
JUDITH DERBY
LEM DOUGLAS DEROEST
MAXINE DESEVE
ROBERT E DESEVE
CRAIG DESLEY
LOIS L. DEVORE
MIKE DEVORE
MRS BILL DICK
BRENDA DICK
DOUG DICK
GARY DICK
KAY DICK
L. E DICK
REV STUART DICK
L L DICKENSON
RUTH B. DICKENSON
DOUGLAS H DICKERSON
LAURENCE W. DICKERSON
WILLIAM O DICKERSON
ANN DICKSON
FRANK F. DICKSON
MARY DICKSON
RANDY DICKSON
DONALD D DIER
PETE DIETZ
CAROLYN DIETZMAN
DALE E DIETZMAN, M D
DANIEL DIETZMAN
SARA DIETZMAN
K. DILL
W C DILL
JANICE DIMKE
JOHN H DIMKE
ANN M. DIMOND
JEAN DISHMAN
DUANE DISQUE
DAROLD DIXON
ERNEST L DIXON
CHARLES W. DOAN
LONNIE DOBYNS
E. A. DOCKWEILER
EVA S. DOCKWEILER
KATHLEEN DOCKWEILER
TED E DOCKWEILER
LAWRENCE L DODD
SUE DODDS
RICHARD V DODGENS
DALE DODSON
DAVID H DOEHLERT
PAMELA DOERR
CHARLIE DOHERTY
GENE DOHERTY
HELEN DOHERTY
JERRY DOHERTY
JOHN DOHERTY
KENNETH R. DOHERTY
MICHAEL F DOHERTY
PATRICK H DOHERTY
PATRICK S DOHERTY
BRYAN D. DONALDSON
DANNY E DONICA
MICHAEL ALLEN DONICHT
TIMOTHY L DONIVAN
ROBERT L DONNELLY
JON DONOVAN
CLYDE J DOOLEY
CLAUDIA DOONEY
ALICE DOREMUS
DONALD O DORMAN, JR
MRS WILLIAM H. DOTSON
VES DOTY
GLEN O DOUD
MARK DOUD
WANDA S DOUD
WILLARD DOUD
STEPHEN DOUGLAS
JOSEPH A DOW
CHARLES M DRABEK
JANE R DRABEK
BRAD DRIGGERS
DAVID E DRIGGERS
DONALD DRUFFEL
CHERYL DRUMHELLER
STEVE DRUMHELLER
BRENT DRURY
ANNE DRYAD
WILLIAM A DRYDEN
DEBORA J DUBUQUE
DOUG DUBUQUE
JOHN E DUBUQUE
ANDY DUBY
JOHN E DUCKWORTH
STEVEN DUCLERCQUE
JOLEE K. DUCLOS
GREG DUFF
JEFF S DUFF
LARRY E DUKE
FRANK L. DUKSIE
HARLAN D DUNAWAY
CLIFFORD L DUNCAN
MICHAEL E DUNCANSON
DENNIS W DUNENCUR
PATRICK DUNHAM
S DUNLAP
BRUCE H DUNN
K. W DUNN
LLOYD R DUNN, SR
RODNEY R DUPUIS
DALE DURFEE
DON DUTTON
BILL DYER
CLARK DYER
EDITH DYER
JAMES W. DYER
PATTI DYER
WAYNE EADES
DORIS EAKIN
MEL EAKIN
KAREN F EASLEY
MARLIN P EASTINDGE
ROCKY EASTMAN
DAVID EATON
FREDERICK EBEL
DIANA EBERHARD
KENNETH F EBERHARD
MICHAEL EBY
SCOTT R ECKERT

6ENNETH ECKINS
KARL & PHYLLIS ECKLER
DAVE ECKMAN, JR
LOREN ECKSTEIN
RICHARD L ECKSTEIN
ROY EDDENS
CHERYLE EDDY
JAMES M. EDDY
JO ANN EDDY
SUSAN EDDY
MAREN EDGI
MILDRED L. EDIGEN
BYEL R EDIN
MIKE EDINGER
JOHN E EDISON
RONALD F. EDISON
DELORIS EDMONDS
JOEL EDMONDS
STACEY EDMONDS
STEVE EDMONDS
JOHN EDMUNDSON
R EDONEL
CHUCK EDWARDS
COLLINE EDWARDS
DALE R EDWARDS
DAVID EDWARDS
DAVID L EDWARDS
LADA M EDWARDS
SUSAN EGLAND
BILL EGNER
GEORGE LEHMER
FRED EITZER
RAYMOND L EKENBURGER
JIM R EKSTRAND
HUBERT EKSTROM
WILLIAM A. ELDER
KATHALEEN A ELKERSON
JIM ELLINGER
LARRI L. ELLINGER
DIANNE G ELLINGSON
G PETER ELLINGSON
VIRGINIA D ELLINGSON
MARIE ELLIOTT
WM , NELLYE, & COSETTA ELLIOTT
ANGIE M ELLS
ARTHUR H ELLS
TED ELMER
JERRY D ELMO
CAL ELSHOFF
DELBERT ELWOOD
DAVID R ELZIG
RICH ELZIG
KAREN M EMERY
ROSS EMERY
ELMER E. EMIL
JOHN R EMMER
DAN M. EMORY
JAMES ENBYSK
L DAVID ENGEL
GLEN ENGELKING
BUD ENGLE
CHAD ENGLE
GARY ENGLE
GAYLE ENGLE
JUDI L. ENGLE
OSIE ENGLE
PATTI ENGLE
A E. & ELEANOR E ENGLER
DOREEN ENGLERT
JERRY E ENGLISH
MAX L. ENGLISH
RUSSELL C EOFF
FRED C. ERICKSON
FREDRICK K. ERICKSON
LARRY ERICKSON
MARVIN ERICKSON
TONY R ERICKSON
CLIFFORD E ERVIN
DIANA L ERVIN
GAYLE E. ERVIN
RHONDA K. ERVIN
ALAN & MYRA ERWIN
CHARLES ERWIN
TIM ERWIN
GARY L ESCHLER
JOHN L ESCUDERO
RICK ESPINOLA
ALLEN C ESTES
ALBERT ESTLING
SARA ESTLING
C. MICHAEL EUTENEIER
DEBORAH EUTENEIER
RAYMOND L. EVANS
AGNES E. EVERETT
ROBERT E EVERETT
JAMES G. EVERS
JEFF EVERS
MICHAEL EVERS
HAROLD A FABRE
CRAIG FAGER
DON & THEA FAGER
U V FAIRCHILD
S. FAIRLEY
MELVIN R FALK
GEORGE A FALKNER, M D
PATRICK FARLEY
ANNE FARMER
MICHAEL B FARMER
GREG FARRENS
KEITH FARRINGTON
BETTY L. FARRIS
TONY FEARS
F FEHR
WILLIAM E FELCH
DUANE F FELIX
MICHAEL FELLOWS
MR. & MRS. ROBERT R. FELLOWS
FRED C FELTER
CHARLES FERDIG
KATRINA FERGUSON
LEONARD FERGUSON
W B. FERGUSON
ROBERTO FERNANDEZ
MIKE FERRO
RONALD W FERTIG
MRS. DAVID J FESSLER
VICKI J FESSLER
DAVID L. FIELDS
LLOYD W FIELDS
BRENT A FIFE
DARLENE FILLA
JAMES & PATRICIA FILSINGER
LEE A FINDLEY
LEE G FINDLEY
STEVE FINK
DELL A FISCHER
GARY FISCHER
RUTH M FISCHER
SUE J FISCHER
BARBARA S FISHLEDER
CHARLES P FISK
M. W. FISK
J D FITTERER, M.D
PAT FITZGERALD
ROBERT P FITZSIMMONS
CHARLES A FIX
RICHARD F FLAIZ
BILL FLEENOR
BARBARA FLEMING
MARK FLEMING
LARRY FLESHMAN
VICKI FLESHMAN
MIKE FLETCHER
SPENCE FLETCHER
LESLIE V FLINT
JEARL D. FLIPPO
JOANNE FLOUDRO
DAVID FLOWERS
CARL T. FLYNN
WILLIS FOERSTERLING
WILLIAM & JOYCE FOGG
SAM FOGLER
CHARLES L. FOLAND
JANICE FOLAND
LARRY FOLEY
MARIANA & JAMES FOLIART
JOYCE FOLLIS
KEN & JEANETTE FONNESBECK
ROBERT A FONTINOT
DAWN FORD
PAULINE FOREMAN
LESLIE FORMAN
JAMES FORSMANN
ROBERT FORTH
LAWRENCE R FORTIEO
AL FORTIER
JACK FOSBACK
RODNEY A. FOSBACK
BARBARA L FOSTER
BILLIE & BILL FOSTER
GORDON H. FOSTER
J K. FOSTER
MARION & BRANT FOSTER
MICHAEL FOSTER
SYD FOSTER
WILLIAM R FOSTER
CAROL FOUNTAIN
ED FOUNTAIN, SR
DOUG FOWLER
WILLIAM FOX
FRANYOS FRADIN
JEAN D FRAER
C. E. "WIN" FRANCIS
GUY FRANCY
CLAIRE M FRANK
NORMAN C. FRANK
RUTH FRANK
RUSSELL FRANKEL, D C
CAROL FRANKLIN
DEE FRANKLIN
RALPH FRANKLIN
TIMOTHY J FRANKLIN
JEANNIE FRANTUM
AMARIS FRANZ
MARY LOU FRANZISE
J FRATHLEY
BILL FRAZIER

DAVID FRAZIER
JENS C FREDERICKSEN
HAROLD FREELS
JOHN FREELS
RENA FREELS
HENRY FREEMAN
ROB FRERES
TODD H. FREUDENBERGER
JACK FRIBERG
DENNIS FRICK
LAURA R FRICKE
MITCH FRIEDMAN
MARY A FRIES
DAVID M. FRITTS
DALE FRIZZELL
MARK FRONADEL
IRENE C. & ROBERT FROYD
HATTIE G. FRY
JEAN FRY
PATTI FRY
ROBERT FRY
DAVID L. FRYE
JOAN FRYE
BARBARA A FRYER
DAVID FUCHS
STEVE FUHRIMAN
BILL FULLEN
DARLENE FULLER
KATHALEEN FULLER
LARRY D FULLER
ROBERT A. FULLER
TIM FULLER
WARREN FULLER
SUE FULLERTON
JOSEPH W FULTON
ROBERT V. FULTON
STEVEN P. FULTON
WILLIAM P FULTON
SETH J FURQUER
SCOTT FURSTENBERG
DAVID W. FUZI
RON GOEBEL
JERRY D GABBARD
JOSEPH A. GAGNER, JR
GEORGE GAGNON
HAROLD E GAIVE
PHILIP GALLAWAY
F M. GALLEGAR
JAMES GALLEY
H. H GALPIN
BRENT M GAMBILL
HERBERT C. GAMBILL
LAWSON D GAMBILL
CAROL GAMMOND
PAUL GAMMOND
DANNY GANTZ
HOWARD R GARDNER
J C GARDNER
LEN GARDNER
MELVIN GARNER
ED GAROUTTE
ARTHUR S GARRETT
JOE H. GARRETT
MELVIN L GARRETT
ROGER C GARRETT
GARY M. GARRISON
ROY E GARTEN
MICHAEL L GARVER
THOMAS E GARWOOD
MARGARET GARY
RYAN GARY
WALTER GARY
W GASKINS
LEONARD GASTON
JOHN R. GATELY
TOM GATTS
LYLE R GAYMAN
WILSON GEEGH
LINDA GEHELE
LYNORE GEHLHAUSEN
DORIS N GEKELER
PATRICK E GEKELER
GWEN K. GENTIL
DONNA GENTIS
SHERM GENTIS
WALT GENTIS
FRANKLIN B GENTRY
HERBERT L. GENTRY
BYRON GROW
AMBER GEORGE
BILLIE JO GEORGE
CECIL GEORGE
DONALD GEORGE
DONALD W GEORGE
DONNY GEORGE
JODI M GEORGE
JOHN GEORGE
KIT & SHIRLEY GEORGE
ROBIN GEORGE
TERRY GEORGE
TERRY E GEORGE
ZEENITH GEORGE
DON GEPECLOSE
RON GERBER
BOB GERL
CAROL B GERL
ELLEN GERL
GARY E. GERL
SUE GERLING
MELFORD A GERMAN
EDWIN W. GERTZ
ERMINE M GERTZ
BRETT H GETCHELL
EDWIN J. GETCHELL
ALTHEA GIBBS
JANICE GIBBS
JUDI J GIBBS
MARVIN K. GIBBS
ZANE GIBBS
BETTY GIBSON
BUSTER GIBSON
CHRIS GIBSON
ELLA M GIBSON
HARVEY L. GIBSON
TOM GIBSON, JR
TOM S GIBSON
MILISSA GIEMAN
ARLENE GIENGER
BILL GIENGER
CHRISTINA LYNN GIFFORD
ROBIN GIFFORD
JOHN GILBERT
DELBERT D GILBY
BENJI GILCHRIST
CLAUDINE E GILKISON
MARVIN GILKISON
GARY D GILL
TINA GILL
ALAN GILLESPIE
LARRY GILLETT
RICHARD T GILLETT
RICK GILLETTE
HELEN J GILLIAM
DONALD B GILLILAND, JR
LUCILLE GILLILAND
MATT T GILLILAND
BEVERLY R GILMAN
SCOTT GILMER
STEVEN H. GIRRARD
THOMAS A GISH
RALPH GIUFFRE
GREGORY H GIVENS
KARLA GJERULDSEN
DON GLASSON
LARRY D GLAZE
GINNY GLAZIER
RON GLENN
WILLIAM D GLENNIE
DONNA Y GLUCK
JOHN GNSUTEGNI
ED GOEBEL
RICHARD GOFF
ROGER GOFF
JAMES I GOIN
JAVIER GOIRIGOLZARRI
DAN GOLCYNSKI
LEONA GOLDEN
ROY GOLDEN
WENDELL H GOLDSWORTHY
DAVID W. GOLEEKE
TOM GOLLIHUR
PETE G GOMBEN
JAMES E. GOMER
THOMAS D GONTY
SIMON GONZALES
DAVID B. GOOD
MIKE GOODERHAM
LAUREL GOODRICH
ROBERT GOODRICH
KENT S GOODYEAR
LEO V GORBETT
SUSAN GORBETT
WAYNE C GORBETT
KIETH GORDON
CRAIG GORHAM
ROSALYNN GORHAM
ANDREW J. GORMAN
MERLE & DIANNE GORS
DOROTHY GORSLINE
MAX GORSLINE
ROLAND GORTE
JOHN GORTSEMA
KELLY L. GOSSITT
MR. & MRS CHARLES GOUCHER
GERALD A. GOUDETTE
JACK E GOUDETTE
JAMES D GOUDETTE
J J GOULD
ORLON GOULD
ROBERT G GRADE
RICHARD L. GRAHAM
ROSIE P GRAHAM
DICK GRANGER, JR.
EDGAR W. GRANGER
R A GRANGER
SCOTT GRANLUND
BOB GRANT

D. J. GRANT
PIRIE J GRANT
AWELLA M. GRASSE
R P GRAUNITZ
ELMER GRAVEN
ETHEL GRAVEN
BOB GRAVES
HELEN I GRAVES
JOHN A. GRAVES
GARY A GRAY
NICOLIN J GRAY
HAROLD GRAYMER
CHRISTINE M GREEN
CLIFF W. GREEN
DOUGLAS E GREEN
EMENT GREEN
JOE GREEN
JOE B. GREEN
JULIA R GREEN
WILLIAM A GREEN
DEBBIE JO GREENE
GARY GREENE
GLENN GREENE
GLYNIS A GREENE
JEAN P GREENE
JEFF GREENE
VIRGIL L. GREENE
DONNA GREENLAW
HARLEY GREENLEE
STANLEY B. GREENOUGH
GREG GREENUP
SARA M GREENUP
WENDELL L GREENWALD
REID & ALICE GREETHURST
GEORGE E GREGER
DOUGLAS GREGG
LOU GREGG
R D GREGG
STEVE GREGG
LYNN L. GREGORY
HELEN & ROBERT GREGSON
MIKE GREITING
DOUG GRESHAM
STEVE GRESHAM
WAYNE GRIDS
DEAN GRIFFITH
JOHN GRIFFITH
BILL GRIFFITHS
SCOTT B GRIMMETT
EULA I. GRISSOM
ROY E. GRISSOM
ED & BETTIE GRITMAN
JAN GROH
DONALD L GROSECLOM
DAVID C GROSS
DENNIS GROTE
LARRY GROTH
JOHN R GROUPE, D.V M.
DEBBY GRUBB
MARSHALL GUENTHER
MARVIN GUENTHER
WILLIAM P. GUGIN
RALPH & CHARLENE GUIFFRE
CRAIG GUITIERREZ
HELEN GULLINGSRUD
STEPHAINE LYNN GUNCKEL
STEPHEN M GUNDERSEN
HERMAN GUNNELS
STEVEN D. GURNSEY
DALE GUSTAFSON
DONALD M GUSTIN
ED GUTRIDGE
RANDELL & SHIRLEY GUYER
RANDELL C GUYER, JR
BOYD GYPSEY
SHERILEE HAALAND
DARYL HAASCH
BRUCE HAASE
FRED HABERMAN
LELAND J HACKWITH
MARY JANE HACKWITH
AARON HADDEN
CHARLENE HADDEN
ERWIN HAFER
WILLARD HAFER
MARK HAFF
MARY ANN HAGELWOOD
RICHARD HAGEMAN
ED HAGEN
EVERETT HAGEN
HOWARD R HAGEN
MAXINE HAGEN
NEIL ERIC HAGEN
SHIRLEY HAGMAN
ALAN HAGON
ROD HAINES
VERNA HAINES
JACK HALDORSON
EUGENE A HALE
FRANCIS A HALE
JESS HALE
DAN HALL
DAVID E. HALL
GEORGE L HALL
JEANNIE HALL
LARRY G HALL
MARVIN D. HALL
CASEY HALLGARTH
JAMES HALLGARTH
LARRY HALLGARTH
MYRON J HALLGARTH
DENNIS HALLGARTT
RICHARD J HALLISY
BEN E. HAMBIN
JAMES H HAMBLETON
FRANK HAMILTON
LARRY L. HAMILTON
WILLIAM HAMILTON
GRANT HAMLIN
PAUL HAMMER
RAMONA HAMMERLY
AL HAMMILL
ALTON W HAMMILL
BRENDA HAMMILL
STEWART HAMMILL
VERA HAMMILL
TONY HAMMON
JENNIFER HAMMOND
PAT HAMMOND
RICHARD C. HAMMOND
PATRICIA HAMPTON
JAMES D HAMS
BUCK HANDBURY
GARY HANDLEPIDE
DONNA HANDYSIDE
NYE HANFORD
TIMOTHY A HANKS
TOM HANLEY
DAVID HANNA
CHARLIE R. HANNON
HAROLD HANSEN
HOBY HANSEN
JANEY M HANSEN
MARK B HANSEN
ORLIN R HANSEN
SHAWN HANSEN
DEE HANSER
BOB & DOROTHY HANSON
CHRIS A HANSON
OIAF SCOTT HANSON
LAURA A. HARDERS
CAROL HARDIG
DEBBIE HARDIN
JEFF HARDIN
JIM D HARDIN
ED HARDT
SUE HARDT
DAVID R HARDY
WILLIAM R HARDY
EDITH R. HARER
FRANK HARER
MICHAEL F. HARER
BRYON L HARGROVE
L PHILIP HARLAND
PAUL M. HARLEN
PAMELA HARLOW
WALTER & HELGA HARM
C JEFFREY HARMAN
BECKY HARMON
KEILEN HARMON
LES HARMON
LOREE A HARMON
LYNN HARMON
WES HAROLD
E V. HARRELL
WES C HARRIN
CRAIG D HARRINGTON
JOSEPH E. HARRINGTON
RON HARRINGTON
BOBBY J. HARRIS
BONNIE HARRIS
DON HARRIS
J D HARRIS
JAMES HARRIS
JEFF HARRIS
JUST HARRIS
K C HARRIS
REBECCA HARRIS
W. O. HARRIS
CHERI HARRISON
GENE R HARRISON
JAN HARRISON
JANCE S HARRISON
JEFF HARRISON
JOE HARRISON
JOE D. HARRISON
KENNETH R HARRISON
ROBERT HARRISON
SHIRLEY HARRISON
LARRY M HARSHFIELD
MICHAEL L HARSHFIELD
PAMELA J HARSHFIELD
GAIL HARSHMAN
KATHY L HARSHMAN
LARRY HARSIN
RANDY HART
DAVE HARTCHEIM

JOHN A HARTMAN
JAMES HARVEY
MIKE HARVEY
JANICE L. HASCALL
ROBERT A HASSELBHD
NICK L HASSELSTROM
ROBERT F HASSMAN
DORLIN HASTE
RICHARD & SANDRA HATCH
LARRY HATFIELD
JAMES HATLEY
JERRY A HATLEY
JOHN H. HATTON
E F HAUGEN
DAVID P HAUSER
KENNETH HAVERKAMP
ROBERT R. HAWES
CATHERINE M HAWK
DAVID L HAWKINS
TIM HAWKINS
TAWRY HAWKS
JEFF & JEWELL HAWTHORN
O B HAYDEN
VIRGINIA HAYDEN
BEN HAYES
LELAND HAYES
RON HAYES
RICHARD G HAYNES
CHRISTOPHER D HAYS
CORA BELLE HAYS
DOROTHY A HAYS
LARRY G HAYS
MARGARET J HAYS
MITCHELL D. HAYS
WILLIAM H HAYS
R D HAYWARD
ARTHUR HAYWORTH
WILLIAM E HAZELTON
BONNIE HEARING
ELMER HEATH
LARRY HEATH
MABEL C. HEATH
THOMAS HEBARD
ASTRICT HECLIN
LITA HEDDEN
TIM HEDMAN
IRVIN HEDT
KENNETH A HEER
R P. HEGLAR
DAVE HEIDA
JANET HEIDSIEK
DEBORA HEIGHES
RANDY E. HEIGLES
PHIL HEILMAN
ANONA M HEIMBIGNER
JAMES M HEINIKE
ELINORE A. HEITMANEK
ROBERT H HEITMANEK
JAY HEITZ
ROBERT D. HEITZMAN
ED HELMICK
STEVE HELUR
GLENNA HEMINGER
JEAN HEMPHILL
BONNIE HENDERSON
CLINTON J HENDERSON
DANIEL L. HENDERSON
DENNIS HENDERSON
ELWAYNE HENDERSON
JAMES E HENDERSON
JANELLE HENDERSON
VERA HENDERSON
CHUCK HENDRIX
DANIEL HENEGHER
JOHN E HENNER, JR
ROBERT HENNINGSEN
WALTER E HENNINGSEN
DENNIS E. HENSHAW
RICK HENSLEE
A R HENSLEY
WILLIAM A. HEPWORTY
GEORGE N HERBERT, M D
JOSEPH HERBERT
DANIAL A HEREDING
MR & MRS ROBERT J HERGERT
GARY J. HERGILL
L HERMEN
CARLA HERN
AL HERNDON
ARDITH F. HERNDON
DAVID S HERR
JOE HERRE
JEANETTE HERRERA
JOE HERRICK
JODY HERRIMAN
MATT HERRIMAN
BRIAN HERRON
GLEN HERRON
HARRIS HERTIS
KURT P HERZOG
RICHARD E HESLAM
J. P. HESS
TERESA L HESS
DUANE H HETTERLEY
GLORIA HETTERLEY
LARRY F HETTERLEY
MICHAEL L HETTERLEY
TERI HETTERLEY
ROLAND HETTERLY
JAMES HEUTSON
IVAN K. HIBBERT
BILL HICKERSON
GENE HICKERSON
DONNA HICKEY
DUANE HICKEY
BARBARA HICKS
JAMES W & AGNES HICKS
LARRY N HICKS
NORMAN L HICKS
DENNIS J. HIGGINS
DAVID R. HIGLEY
DENNIS HILATTRY
ARCHIE L HILL
CAROL HILL
DON HILL
JOHN HILL
RICHARD HILL
STEVEN HILL
RICK HILLBERG
JOHN HILMAN
LAYNE D HINCKLEY
DAWN HINES
LORI J HINES
JAMES F. HINKL
GEORGE F. HINTON
JOHN HINTON
JOHN L HINTON
TOM S. HINTON
ROBERT L. HIRE
JIM B HIRTZ
DAVID HIXON
WILLIAM A HIXSON
MIKE HOCKERSMITH
VERA E HOCKETT
PATSY D. HODGE
RONALD B HODGE
WAYNE K HODGE
BECKY HOEFT
BILL HOEFT
HEATHER HOEFT
LARRY HOEFT
FRANK HOFFMAN, M D
JAMES R HOFFMAN
JEFF J. HOFFMAN
JOHN E HOFFMAN
SHARIECE E HOFFMAN
THELMA HOFFMAN
MARI L HOFFMANN-NELSON
CALVIN J HOGG
ELDON S HOGG
K HOHNAN
LARRY JOE HOHSTADT
PATRICIA HOLADY
GLENN HOLBROOK
RALPH L HOLBROOK
ROBIN HOLBROOK
TERRY HOLBROOK
RALPH HOLCOMB
SCOTT HOLCOMB
DONNA J HOLLAND
JERRY HOLLOMON
EDWARD M HOLLORAN
JACQUELYN HOLLORAN
BILL HOLLY
BETTY JEAN HOLMES
CECIL S HOLMES
ROBERT HOLOWECKY
TOM M. HOLT
JAY W HOLZMILLER
TANA HOLZMILLER
C M HOLZWARTH
PENNY HOPE
RON HOPE
KATHY HOPFNER
CHARLOTTE D HOPKINS
DENNIS HOPKINS
JACK HOPKINS
MIKE HOPKINS
RICHARD G HOPKINS
VIGIL HOPKINS
WILLIAM D HOPKINS
BILL HORN
SCOTT HORNGREN
JUDY HORTON
RITA HORTON
DUANE E HOSKINS
HARRY HOTHOUSE
ROBERT G HOUGH
TAD HOUPT
VERN HOUSDEN
DALE HOUSTON
DELBERT HOUSTON
KERRY HOUSTON
CYNTHIA HOVEZAK
CHRIS HOWARD
DONALD HOWARD
JACK HOWARD

JOHN J HOWARD
KATHRYN E HOWARD
KENNETH M HOWARD
RODNEY N HOWARD
SHERRY HOWARD
WENDY HOWARD
WARREN M. HOWE
CHARLES L HOWELL
CHARLOTTE HOWELL
CLIFFORD HOWELL
EVERETT C HOWELL
FRANK HOWELL
FRED H HOWELL
JACK L HOWELL
JOSEPHINE A HOWELL
KATHLEEN HOWELL
MARVIN HOWELL
OLLIE HOWELL
VALERIE HOWELL
WILLIAM C HOWELL
ROYCE HOWEY
GRACE P HOWLAND
MEAHL HUAN
O F. HUBBS
NORMAN HUBER
JANICE L HUDSON
JAY DEE HUDSON
JERRY HUDSON
PATTI HUDSON
MIKE HUECKMAN
MEREDITH LYNNE HUESTIS
CRAIG HUFFMAN
NIDE HUFFMAN
MERLE C. HUFFORD
JOSEPHINE HUG
RUSSELL HUG
ALLEN HUGHES
CLAUDIA HUGHES
JEAN C HUGHES
LARRY D HUGHES
MERLIN HUGHES
RICKEY L. HUGHES
W E. HUGHES
CHERYL HUGILL
LINETTE HUILENAL
CRYSTAL A HULICK
CONNIE HULL
ROBERT L HULL
SHIRLEY L. HULL
KERRY HULSE
BEN HUMBERT
BENJAMIN C HUMBERT, JR
BRAD HUMBERT
CASEY HUMBERT
CINDY HUMBERT
DAN HUMBERT
DERRICK HUMBERT
KIM J HUMBERT
LLOYD HUMBERT
NED HUMBERT
ROSE ANN HUMBERT
ROY V HUMBERT
SAM HUMBERT
SHARON HUMBERT
TROY HUMBERT
TWILA HUMBERT
W J HUMBERT
L H HUMPHREY
CARLEY HUMPHREYS
TOM HUMPHREYS
DAVID HUMPHRIES
JACK W. HUMPHRIES
JOHN HUMPHRIES
STEVE HUNKAPILLER
ALVIN HUNT
DANNY L HUNT
DIANE H. HUNT
GENE HUNT
GEORGE N HUNT
LOREN R. HUNT
ROBERTTA HUNT
WILLIAM W HUNT
JUDY HUNTER
LLEWELLYN G HUNTER
WAYNE HUNTER
DOUGLAS R HUNTLEY
DENNIS HURLEY
TRISHA HURST
D. P HUSE
JAMES HUSELTON
BILLY HUSSEY
KEN HUTCHINSON
REX HUTSELL
GEORGE W. HUTSON
PATRICIA HYATT
WAYLAND HYATT
CHERYLE L HYMAN
GARY L. HYMAN
JIM INGALLS
VERNITA INGALLS
BEVERLEY L INGLIS
DICK & MARRION INGLIS
DWIGHT A INGLIS
ALAN M INSKO
LEE & ELIZABETH INSKO
ROBERT IRELAND
LOREN IRNLY
MICHAEL J IRVING
ADAM COREY ISAACSON
ARI A ISAACSON
CHRISTINE J. ISAACSON
JASON R. ISAACSON
RICHARD N ISAACSON
SARAH C. ISAACSON
SETH ISAACSON
LARRY ISENBERG
RUTH ITTNER
LINDA ITURBIDE
TED & MARGARET IVESTER
RAYMOND JACK
GORDON JACKINS
JAMES JACKS
ANDREA JACKSON
ASA L JACKSON
DELMER JACKSON
DIANNE JACKSON
DON JACKSON
GAIL W. JACKSON
GLADE A JACKSON
JOHN T JACKSON
JOSEPH M JACKSON
LYNN JACKSON
MICHELLE JACKSON
PHILIP L JACKSON, PH D.
RAY JACKSON
RICHARD A JACKSON
SONIA JACKSON
LEWIS JACKY
NATHAN JACOB
ALBERT E JACOBS
LAWRENCE JACOBSON
ALBERT R JACQUES
BERT JAGER
RICK JALI
JIM JAMES
JEAN L. JAMISON
BENNIE W. JANES
LEON JARMIN
MICHAEL L JARVER
RICHARD T JARVIS
JERRY JAYNE
KEN JEFFERIES
WARDELL RAY JEFFORDS
VERNON SHAD JEFFREYS
DENNIS A. JENFIELD
KATHY J JENKINS
KEVIN L. JENKINS
MAX D JENKINS
MONA E. JENKINS
PHILLIP H JENKINS
ANAH A. JENNINGS
DAVE JENNINGS
GERRIE L. JENNINGS
GARY JENSEN
IVAN E. JENSEN
JANET JENSEN
MAXINE Z JENSEN
PATRICK F JENSEN
JESSIE R JEWELL
JOYCE E. JEWELL
CHARLES W. JOHANNINGMEIER
GEORGE JOHNS
TOM JOHNS
BRUCE JOHNSON
CHARLES K. JOHNSON
CONNIE L JOHNSON
D M. JOHNSON
DANNY L. JOHNSON
DONN JOHNSON
EDWIN S JOHNSON
ERIKA I. JOHNSON
ERWIN H. JOHNSON
FRANK T JOHNSON
GARY L. JOHNSON
GEORGE JOHNSON
GLEN J. JOHNSON
GLENN JOHNSON
GORDON C. JOHNSON
HARMON F JOHNSON
HULETTE M JOHNSON
JERRY JOHNSON
JESSIE J JOHNSON
JUDITH S JOHNSON
KEN JOHNSON
L KAY JOHNSON
LANCE JOHNSON
LEONARD JOHNSON
MARC JOHNSON
MARILYN JOHNSON
MARK A JOHNSON
MARK C JOHNSON
PATRICIA B JOHNSON
RAYMOND M JOHNSON
REID S JOHNSON
ROBERT C JOHNSON
RODNEY JOHNSON
RON JOHNSON
RUSSELL JOHNSON

ARALYN JOHNSON
SHERRY JOHNSON
SID JOHNSON
STEVEN D JOHNSON
VERNA D JOHNSON
W L. JOHNSON
CLARENCE H. JOHNSTON
COY D. JOHNSTON
GREG JOHNSTON
JANICE JOHNSTON
MARK R JOHNSTON
MICHAEL JOHNSTON
RICHARD L. JOHNSTON
THOMAS L JOHNSTON
ARTHUR H. JOHNSTONE
ANN M. JONES
ANNA JONES
BECKY JONES
BESSY JOYCE JONES
BILL JONES
DELBERT M JONES
DENNIS JONES
DOUG JONES
FRANCES B JONES
MR. & MRS. GEORGE JONES
JAMES K. JONES
JOHN T. JONES
JOWELL R. JONES
KENNETH L. JONES
LETHA E JONES
LOUIS M. JONES
LOUISA E JONES
MICHAEL R JONES
PAMELA JONES
SHELLEY JONES
STEVEN E. JONES
SUZAN JONES
VIRGINIA F JONES
MARGE & D R JORDAN
ANITA JOZEFIAK
CLIFFORD P JUDY
ROSELLA JUMBERT
BILL JUNGERT
BILLIE JEANNE JUNGERT
ROBERT H KAHL
JOHN C KAHPUNBEK
RAY D. KALAL
ARCHIE M KAMA
SHERRY KAMMERS
CARROLL E. KARNES
JUANITA KARR
OTTO A. KARRELS
CHRIS KARROSKI
JEFF KASCHMITTER
MELISSA KASCHMITTER
JODI KASEBERG
TERRY D. KASEBURY
DEAN J KATZ
HERBERT KATZ
ROBERT KAUF
TED KAUFFMAN
YVONNE KAUFMAN
THOMAS A KEARNEY, M.D
MICHAEL J KECKI
G. KEELING
CURTIS W KEEN
KELLY J KEEN
SHARON KEEN
WAYNE KEISTER
JOHN KEITZMAN
EDWARD S KELLER
GARY L. KELLER
SHERRY T. KELLER
DEBBIE KELLERMANN
RONALD KELLERMANN
JESSIE KELLY
JOHN E KELLY
TOM KELLY
RAY KELSO
STEVE KELTY
ALVIN KEMPEL
CALVIN K. KENDALL
CARRIE KENNEDY
DONALD R KENNEDY
GEORGE C. KENNEDY
GERALD KENNEDY
SID KENNEDY
HARRY KENNISON
COLLEEN KENNY
WILLIAM J KENNY
ERIC KENT
ROBERT KEOUGH
TODD D KEPPLE
DEBBIE KERBY
CARTER KERNS
JOE KERRY
BONNIE E KESECKER
JIM KESSINGER
JOE H. KEY
MARIE B KEY
MARJORIE KIDREY
DIANNE KIEL
HAILEY KILBY
JOAN I. KILBY
KYLE KILBY
SARAH KILBY
TOM M KILBY
MICHAEL J. KILKENNY
DON KIMBALL
RUTH B KIMBALL
EDDY KIMBRE
MICHAEL D KINDLE
DONALD P KING
DONALD S. KING
DORIS KING
JOHN KING
RUBY KING
WILBUR KING
STEPHEN L. KINGFORD
TOM KINGSTON
ELEANOR K. KINKEAD
JAMES R KINKEAD
JERRY W KINNEY
BUFORD KINNISON
DONALD R KIRCHHOFER
KEN KIRKEN
DARRELL KIRKWOOD
DON KISER
VALERIE KITCHEN
BILL KITSER
ALBERTA H. KITTLESON
J. A KITTRICK
HENRY D KLEIN
JOSEPH KLEM
BOB KLICKER
JACK L. KLUNDT
RANDY KNADLE
LARRY KNAPE
LAREY KNAPP
DOROTHY KNECHTEL
WILLIAM C. KNECHTEL
ALBINA KNESS
GARY KNIGHT
OLEY KNIGHT
PATRICE KNIGHT
RUTH L. KNIGHT
BONNIE KNOBEL
CINDY M KNOBEL
ROGER KNOBEL
KENYON A KNOPF
DENNIS B. KNOWLES
ROBERT KNUTSON
RAY M. KOEFOD
GARY A KOEGLER
GARY KOEHLER
MELVIN KOHFIELD
GEORGE B KOHLER
VEVA KOHLER
LEROY C KOLIN
DARLA KOLLER
EVERETT A. KOLLER
DAN KOMNING
SUE KOMNING
L. M. KONE
HILTON J KONEN
ESTHER KOONTZ
FRED E KOONTZ
CARLA J. KOPLEIN
MICHAEL EDWIN KOPLEIN
CHARLES R KOPP
MAYANNA S KOPP
RICHARD C. KOPP
RONALD J KOPP
KEENA J KOROPESKI
NANCY KOSTERLITZ
STANLEY KOSTKA
EDDY S KOUNO
JOHN F. KRAEMER
DANIEL E KRAFT
JEAN H KRAPFEL
GEORGE S KRASLE
KATHRYN KREBS
PHILLIP J KRESS, D V.M.
VERN D. KROFT
ROBERT H KROG
ROBERT KROSTON
DALE E KRUSE
HAZEL E. KRUSE
BARBARA A KRUSOW
STANLEY L KRUSOW
ARNIE KUBIAK
DAVID L. KUCH
BONNIE M KUECHENMEISTER
MARK E. KUECHENMEISTER, M D
ALDO J KUNSY
MICHAEL KUPFER
EDGAR A KUPILLAS
JOHN KURTS
ROBERT KUTHER
JACK KUYKENDALL
JIM LABBE
MICHELLE LADD
MRS L. R LADOUCEUR
KRIA LAEHER
BERNON S LAFARGE
SCOTT LAFRANCHI
PEGGY JO LAGER

RITA LAGNER
AL LAIGAENZ
NEAL O. LAIR
DORALEE LAIRD
ROBERT LAIRD
TOM LAIRD
DONNY LAKE
JAMES C LAKE
HAZEL E. LAMBERT
JOHN M. LAMBERT
STEVEN P. LANDIS
JIM LANDRETH
CAROL LANDRUS
EARL D. LANDRUS
SCOTT P LANDWEHR
F. V. LANE
JIMMIE S LANE
ROBERT V. LANE
RUBY LANE
ROBIN LANFIELD
MARRION LANGSTON
BILL W LANKFORD
CLIFF LANKFORD
DAVID B LANKFORD
DEBBIE LANKFORD
GLORIA LANKFORD
J A LANKFORD
JACK LANKFORD
JAMES A LANKFORD
JANET LANKFORD
JEFF LANKFORD
JERRY LANKFORD
LARRY LANKFORD
MIKE LANKFORD
MORRIS LANKFORD
NANCY M. LANKFORD
STEVEN DALE LANKFORD
LES L. LAPIERRE
ELAINE LARDER
GARY LARGENT
MICHAEL LARKIN
CAROL H LARREAU
BRENT LARSEN
LANNY LARSEN
GALE C LARSON
JACQUE LARSON
JIM LARSON
MICHEL R LARUE
BURKE L. LATHROP
DALE LATHROP
DOROTHY R LATHROP
JOE LATHROP
RISA G. LATHROP
TONI LATHROP
ANN LATOURETTE
LEE S LAUDEN
D E LAUGLIN
DAVID LAWHEAD
J TERRY LAWHEAD
MARK LAWLER
LAURIE LAWRENCE
JANET O LAWS
LEONARD S LAWS
DOROTHY M. LAWSON
JESSE W LAWSON
KEN LAWSON
RICHARD LAWSON
JAMES G LAYMAN
JUDITH N. LAYNG
MELVIN LAYNG
ROBERT & SANDRA LAZINKA
GARY LE CLAIR
SHARON LE CLAIR
MORRIS LE FEVER
C E LEACH
LARRY P. LEACH
RAYMOND K. LEACH
DICK LEASY
JIM LEBO
SAM LEDGERWOOD
GORDON D. LEE
IRENE LEE
JEANNIE LEE
KATHLEEN LEE
PATRICK LEE
RONALD LEE
TAMRA LEE
VIC LEEPER
DAN LEES
MILFORD R. LEFFEW
JOSE R LEGENITA
FRANK & LORAINE LEHRMAN
JOHN LEIER
MIKE L. LEIFER
CHARLOTTE LEINBACH
E J. LEINBACH
ANNE LEISER
JERRY LEISLE
CHARLES LEITCH
TILLISE LEIUZ
J. R LEMKE
TRACIL D LEMLEY
ROBERT LEMMON
LARRY LEMONS
JOHN LENHARDT
DON LENNOTZ
STANLEY J. LENOX
DONALD P LENTZ
PAMELA L. LENTZ
A LYNN LEONARD
BILLIE LEONARD
JOHN M & ANN M. LEONARD
DARREL & BARBARA LEPIANE
RUTH LEPIANE
TIM LETHLEAN
COREY LEUDEL
KELLY P LEVEL
ROY M LEVERENZ
WINIFRED LEVERENZ
BOB LEWIS
DAVE LEWIS
ESTHER LEWIS
EVELYN & BRIAN LEWIS
M M LEWIS
MARQUERS L. LEWIS
JOHN LEYENDECKER
ARTHUR LIGHTFOOT
JAMES H. LILES
SHARON C LILES
MARY LILGA
TIM LILLEBO
ROBB LINCOLN
ROBERT R LINCOLN
KIM LINDELL
ROBERT LINDSAY
JOHN LINDSEY
JOHN E. LINDSEY
ROBERTA LINGAFELTER
EARL A LINNELACH
CLIVE R B. LISTER
NOAL LITERAL
WES A LITERAL
JACK LITTLE
CECIL W LITTLEJOHN
JOYCE LITTLEJOHN
ANN LITTLEWOOD
DALE M LITZENBERGER
WAYNE LIVINGSTON
BOB LLOYD
C C LLOYD
SHELDON J LLOYD
CHARLES & JOANNE LOBDELL
MICHAEL A. LOCKART
A MILES LODWELL
AMELIA K. LOFTUS
WILLIAM D LOMMASSON
DENNIS LONG
DIANNE LONG
JOE LONG
JUDY LONG
MIKE LONG
ROBERT G. LONG
T S. LONG
HAROLD LONGACRE
TERRY LONGBOTHEM
GARY L LONGHORN
GEORGIA LOOMIS
ROLLO LOOMIS
KARIS BETH LOOP
CHARLES A LOPRESTI
DONALD J LORENTZ
HENRY L LORENZEN
ROBERT L LORENZEN
F L. LORGREN
PAT LORGREN
WILLIAM H. LOVAN
WILLIAM S LOVAN
APRIL V LOVE
ED LOVEJOY
ARLENE LOVELL
MERLIN LOVELL
ROBERT L. LOVELL
WALTER S LOVELY
RAY LOWDER
DEE LOWE
DOUGLAS E LOWE
RONALD R LOWERY
JAMES C. LOWRIE
JOHN F LUCKEN
PHIL LUCLEUHYER
PATTI ANN LUDEMAN
WAYNE LUDEMAN
BEN G LUETHE, JR
JENE L LUND
TERRI J. LUND
DAN L LUTHER
RANDOLPH E LUTT
THEO LUVAAS
GLENN A LUX
BRIAN LUXTON
JUDY LUXTON
LARRY J LUXTON
KAREN LYFARD
DONALD J LYMAN
LINDA K LYMAN
DON J. & LEILA M LYNCH
TAMMIE LYNCH

MICHAEL LYNGHOLM
ORRIN LYON
DONALD F MACARTHUR
WILLIAM F MACDONALD
R B MACDUFF
LARRY B MACH
JOHN MACHUGH
BILL MACKEY
CATHERINE MACKEY
FRAN R. MACKEY
THOMAS B MACKEY
TOM MACKIE
BOB MACPHERSON
LARRY MACY
BEN J MADDEN
M R MAGALSKI
STEVE C. MAGAN
TONDA MAGER
LINDA MAGILL
ROBERT J MAGRUDER
FERDINAND W MAGULA
TONY MAHAFFEY
WILLIAM H MAHAN
LYNN MAJOR
RAYMOND MAKIN
JIM MALCOM
PATRICIA MALCOM
STEVE MALCOM
ARLENE M MALEAN
MARGIE MALECEE
SCOTT MALIWAUKI
WILBUR R. MALLOY
ARTHUR G. MANESS
RODNEY A MANISS
JANET C. MANJANZ
CECIL S MANN
DONALD L. MANNY
J. B MANSFIELD
LUCYLLE MANSFIELD
RONALD G MANT
HERBERT MARCH
LOYD MARION
JAMES N. MARKER
STEVE MARKER
CRAIG MARKHAM
WILLIAM C MARLOW
JEFF MARR
JUDY MARR
BRUCE MARSHALL
G W MARSHALL
LARRY MARSHALL
LYLE MARSHALL
ALVIN MARTIN
APRIL MARTIN
DANIEL B. MARTIN
DON L. MARTIN
G BRICE MARTIN
HERBERT H MARTIN
J V. MARTIN
JUDY MARTIN
K. W MARTIN
LARRY MARTIN
NELDA MARTIN
ROSALIE E MARTIN
WILLIAM R MARTIN
RAY MARTINEZ
ROSIE MARTINEZ
RUDOLPH J MARTINEZ
CHARLES L MARTZ
THOMAS J MARUM
DONALD J MARX
ALVA R MASCALL
MARK MASON
TOBEY R MASON
FRED H MASS
R DAYLE MASSEY
MR. & MRS ORVAL MATHENY
JIM MATHEWS
WALLACE E MATHEWS
R. H. MATTHEWS
SANDY MATTHEWS
DAVID MATTISON
DEBBIE MATZICK
ALAN G. MAWHINNEY
BEN L MAXEY
DARRELL MAXWELL
MAE MAY
PETE MAYER
JOHN C MAYNARD
KIM MAYO
LESLIE T MCADAMS
PENNIE MCADAMS
TED B. MCATEE
LEONARD MCAULEY
STELLA MCAULEY
LILLIAN C MCBRIDE
LARRY MCBROOM
LARRY MCCALDEN
DARYL MCCALL
DEBBIE MCCALL
ROBERT R MCCALL
DAVID J. MCCARTHY
DAN MCCARTY
W N MCCAW
MICHAEL & KATHLEEN MCCLINTOCK
RICK MCCLOY
DANIEL B MCCLURE
TODD MCCLURE
WENDY R MCCLURE
WILLIAM A MCCLURE
MARK MCCOMAS
DIANA MCCONKEY
MARI O. MCCONNEL
JAMES R MCCONNELL
RICHARD A. MCCONNELL
HILLARY MCCOOK
ORVAL MCCORMACH
GREG MCCOY
JOYCE MCCRAE
LINDA MCCRAE
SANDRA K. MCCRAE
MIKE MCCRAW
SHARON MCCRAW
STEVE MCCRAW
DAVE MCCREADY
FLOYD MCCUBBINS
DONALD D MCCULLOUGH, JR
KENNETH L MCCULLOUGH
WILMA LEE MCCULLOUGH
DAVE MCCUNE
ED MCDAID
DENISE M. MCDANIEL
MELVIN MCDANIEL
TIM MCDANIEL
CLAUD MCDONALD
PATRICK MCDONALD
TOM MCDONALD
WILLIAM MCDONALD
GARY R MCELHANEY
T W MCELLIGOTT
E J MCELRATH
JESSE MCELROY
RUSSELL R MCENTIRE
MYLO MCFAREN
WILLIAM C. MCFAREN
DENNIS MCFARLAND
JON W MCFARLAND
LELAND MCFARLAND
GARY MCFETRIDGE
BUD MCGIRR
GREG MCGUIRE
MIKE MCHATT
CLAY MCHORE
KENNETH W MCINTOSH
LINDA MCINTYER
BARBARA J. MCKAGUE
BETTY MCKAGUE
DONALD DEAN MCKAGUE
DONALD W MCKAGUE
H J. MCKAGUE
JERRY L. MCKAGUE
KELLI J. MCKAGUE
MIKE MCKAGUE
MONTE RAY MCKAGUE
DONALD D MCKAGUEM, JR
DAVID MCKENNA
DANIEL J. MCKENZIE
MATHIS J. MCKEON
JAMES E MCKINNEY
MIKE MCKINNEY
LARRY MCKINNIS
LAURA A MCKINNIS
DAN MCKINNON
BOB MCKNIGHT
ROBERT G MCLACHAN
EDWIN B. MCLARIN
KIM MCLAUGHLIN
ROBERT J MCLAUGHLIN
ROBERT P MCLAUGHLIN
BURDETTE B. MCLEAN
RALPH E MCLEAN
GEORGE D MCLEISH
DAVID D MCLOCHLAN
VERNA MARIE MCMILLAN
WILLARD MCMILLAN
LLOYD G MCMILLEN
VERNON L MCMILLEN
JOANNE MCMINIMY
PATRICK MCMULLAN
D A MCMURLO
MARY MCMURTREY
PAUL MCNAUGHTON
M D MCNEELEY
RONALD L MCNEIL
SHERYL L. MCNEIL
MARY MCPHERSON
STEVE MCPHERSON
ROBERTA MCQUINN
STAN MCQUINN
CHARLES S MEAD
RICHARD L MEADOWS
ALOHA MEDLOCK
MILO F MEDLOCK
ROBERTA L MEDLOCK
BUD MEEK
DANIEL L MEEK
GENE MEG

JEANNE C MEGY
LEHMAN C. MEGY
JENNY L MELLISH
GARY W MELTON
WALTER L MELTON
ELLEN MENDOZA
LLOYD MENTZER
NORMAN MENTZER
MAX MERLICH
MRS J G MERRIFIELD
CHARLES C MESPELT
LARRY MESPELT
F L. MESSIER
ADAM M MESSINGER
BOB MESSINGER
CAROL MESSINGER
JULIE MESSINGER
PAULA JOAN MESSINGER
STEVE METCALF
BARBRA J. METZGER
WILLIAM J METZGER
SUZANNE MEURET
ALICE MEYER
BRADLEY M. MEYER
BRUNO MEYER
GERALD T. MEYER
GREG MEYER
ROBERT W. MEZGER
ELDON MICHAEL
MARGUERITE L. MICHAEL
ROBERT MICHAEL
DOLORES MICHEL
LEO J MIDDENDORF
DWIGHT MIDDLETON
E. LORRAINE MIDDLETON
JIM C MIDDLETON
STEPHEN MIDDLETON
G MIKEL
BOB MILLAR
ALAN MILLER
CARMEN MILLER
CHRISTINE D MILLER
CODY R. MILLER
DENNIS D MILLER
DONALD RAY MILLER
ELEANOR A. MILLER
ERON MILLER
EUGENE H MILLER
HELEN MILLER
HON. JOHN MILLER
KEVIN T. MILLER
LANCE D MILLER
LARRY G MILLER
MARK MILLER, M D
MICHAEL C. MILLER
MIKE MILLER
R D. MILLER
RICHARD MILLER
ROY MILLER
RUSSELL L MILLER
MR & MRS SCOTT MILLER
WAYNE MILLER
WILLIAM MILLER
ARCHIE U. MILLS
LEX MILLS
MELISSA MILLS
NANCY MILLS
RANDALL R. MILLS
K MILT
W. L MINNICK
JOHN D MINOR
P. MIO
CHARLES L MITCHELL
FRED M MITCHELL
J R. MITCHELL
JAMES A MITCHELL
JON F MITCHELL
MARLENE MITCHELL
MARY ANN MITCHELL
REX A MITCHELL
RALPH S MOBLEY
CHAS MOELLER
CHUCK MOELLER
DONNA J MOELLER
INA MOELLER
PAUL MOFFETT
DAN MOFFIT
KENNETH MOFFIT
MAX MOFFIT
PATTY MOFFIT
ROBERTA MOFFIT
IRIS R MOISE
FRED L. MOLLER
ANNE MOLONEY
JOHN B MONAGLE
MELODY MONAHAN
WILLIAM M MONAHAN
DANIEL E MONCRIEF
DAVID R MONTEE
DEBRA MONTEE
ANN MONTGOMERY
D M & C S. MONTGOMERY
MR & MRS GLENN R MONTGOMERY
RICHARD MONTGOMERY
STEVE MONTGOMERY
DAVID MOODY
MAXINE E MOODY
GLORIA L. MOON
HAROLD R MOORE
HENRY H. MOORE
JAMES MOORE
MICHAEL MOORE
RALPH E MOORE
GRACE MOORES
R MOORES
BARBARA MOREHEAD
ETHEL S MOREHEAD
MIKE MOREHEAD
PAUL MOREHEAD
THOMAS L. MOREHEAD
CARL J MOREHOUSE
JUNE M MOREHOUSE
ANTHONY MOREIRA
JIM MORELOCK
LEROY MORFORD
GRANT MORGAN
JOHN E MORGAN
WESLEY R MORGAN
BERNICE MORRIRA
CHARLES E MORRIS
CHESTER MORRIS
EVERETT R MORRIS
KEVIN D MORRIS
MYRTLE MORRIS
JUDITH MORRISON
TOM MORRISON
W H MORRISON, JR
P JOE MORSEJACK NEAL
ROBERT D MORSE
ANDREA MORTIMORE
ROGER MORTIMORE
TOM MORTINSON
CRAIG MORTON
DOUGLAS C MORTON
ETHELMAE MORTON
HEATHER MORTON
JOSH MORTON
KAREN MORTON
VIRGIL D MORTON, SR
DANIEL M MOSER
HELEN MOSER
C. R MOSS
HAROLD N. MOSS
JAMES & RAMONA MOSS
RAY MOSS
ALICE J. MOSSALL
DEANNA MUELLER-CRISPIN
J. TRACY MUETH
MIKE MULLINS
TED MULLINS
JACK MUNDON
VIRGIL MUNK
STEPHEN L. MUNKERS
DAN MURCHISON
DONNA MURDOCK
KIM MURGROVE
LESLIE E MURPHY
RONALD A. MURPHY
R K. & MARGARET G MURRAY
DONEL E MURRILL
LYLE MURRILL
GAYE WOOD MURRY
DREW MURSER
COREY J. MUSE
LARRY MUSE
SHIRLEY MUSE
KATHY L MUSICK
PAUL W. MUTCH
DARRIN MYERS
HUGH A MYERS
JOHN E MYERS
KATHERINE L. MYERS
LIN MYERS
ORVALLE L MYERS
PHILIP G MYERS
JIM MYRON
JUSTINE F. NAGEL
JAY I NAGLE
JOY L NAIR
JOHN NANCE
WAYNE A NANCE
RON NANTZ
LOU NARAMORE
GREG NARES
DON NARRAGON
ELLEN E NASH
HARRY C NASH
OLIVE J. NASH
SJENNA NASH
THOMAS E. NASH
VICTOR B. NASH
VINCE NAUGHTON
LINDA R NAVE
STEVEN NAVE
GREG NAY
CATHY NEAL
DENNY R. NEAL

JACK NEAL
MIKE L. NEAL
HON DARWIN R NEALEY
KEN NEARING
TODD NECHAN
LEWIS A NEGRI
DUANE NEIFFER
ANN NEISTADT
B NEISTADT
COREY M. NEISTADT
LORETTA NEITCH
CARL E. NELSEN, M D
BERNADINE NELSON
DAVID NELSON
DENNIS R NELSON
HERBERT S NELSON
J. MIKE NELSON
MARCELLA I NELSON
PETER M. NELSON
ROGER NELSON
STEVE NESS
RICK NEUBY
EDGAR C NEWALL
BARB NEWBY
FRED L. NEWCOMB
CHARLES A NEWMEYER
DAVID C NICHOLS
JENNIFER NICHOLS
MICHELLE NICHOLS
PAULA NICHOLS
CRANZ NICHOLS III
CARL D. NICKELS
J. RUSSELL NICKERSON, JR
ROBERT W NICKERSON
LEW NICKLES
ELLEN M NICOLETTI
ORVIS NIELSEN
WILLIAM NIELSON
WAYNE L. NINEMIRE
BOB NISBET
HERB NISSEN
MELODY D. NISSEN
ROBERT L NISWENDER
RANDY R NITZ
WALTER W NIX
THOMAS L NOLAND, PH D
JOHN NOLEN
KIMBERLEE NOLL
RALPH L. NOOJIN
BOB NOOY
JOHN K. NOOY
SHERLENE D. NOOY
JACK R NOREEN
PAUL NORENBERG
NANCY J NORIKANE
PEGGY L. NORRIS
TED L NORRIS
TONY NORRIS
JAMES & ELIZABETH NOSTDAL
ZACHARY & SARAH NOSTDAL
VINCENT NOVOTNY
DAVE R NOYES
JOHN E NURMI
NADINE NUXALL
VICKI OBER
W H. & MARGAURY OBERTEUFFER
BURKE O'BRIEN
GINGER O'BRIEN
HARRY O'BRYAN
DAN OCACIO
EVERETT & EDITH ODOMS
JIM O'DONNELL
MARK R OERGEL
D K. OESTREICH
KIM OGDEN
POLLY OGDEN
JEFF O'HARRA
RON OIR
EILEEN O'KEEFFE
DAVID C OLSEN
LAUREN OLSEN
RANDY OLSEN
RICHARD D OLSEN
SHARON L OLSEN
DON W. OLSON
JESUS S OLUNA
JEAN OLVERA
KEVIN E. O'MALLEY
BETTY LOU O'NEAL
RAY O'NEAL
DONALD A O'NEIL
WALT ONSTOT
ROBERT ORDWAY
RONALD L. ORENNEN
J. M OROURKE
IGNACIO OROZCO
MARY ORR
WILLIAM J. ORTH
R MARRINER ORUM
JOHN L. OSBORN
MARALTA OSBORNE
CHESTER L. O'SHELL
HOWARD OSTBY
GEORGE & RHONDA OSTERTAG
H J OSTLIND
LEN OTTO
MICHAEL W. OVERBAY
ANN OVESON
JAMES E OWEN
JIMMY R OWEN
JOHN E OWEN
RON A OZMENT
ERWIN B PACE, SR
ROBERT B. PAGE
JAMES & SHERYL PAGLIERI
STEPHEN PAGLIERI
DEBBIE PAINE
WINFIELD PAINE
LEE PALMER
MARK E PALMER
ROBERT LAW PALMER
MALINDA P PANKL
LARRY PAPA
CRYSTAL K. PAPINEAU
DONNIE W PAPINEAU
EARL & CHARLENE PAPINEAU
WAYNE PAPINEAU
STEVE PAPP
NANCY M PARK
ROD PARK
WILLIAM A. PARKE
DONALD L PARKER
DOUG PARKER
LARRY PARKER
DONALD PARKS
LINDA PARKS
MABEL E PARKS
ROBERT PARKS
SETH PARKS
TOM PARKS
CANDACE PARR
CHUCK PARR
ALFRED PARRET
BONNIE L PARRET
NICK PARRET
SARAH PARRINGTON
MARILYN PARRY
DELL PARSONS
CRAIG PARTIN
JERRY PARTIN
ROBERT PATEN
WILLIE S PATTEN
C K. PATTERSON
CATHY L PATTERSON
GARY PATTERSON
GUY PATTERSON
JAY PATTERSON
KAY PATTERSON
KIM C PATTERSON
MAXINE PATTERSON
NORMAN PATTERSON
SANDRA K. PATTIN
LISABETH A PATTON
MARK PATTON
TIM PATTON
WILLIAM PATTON
SCOTT PAUL
RICK A PAULLUS
SHANNA M PAULLUS
FAY A. PAUSTIAN
GORDON B PAUSTIAN
JANICE PAUSTIAN
LES PAUSTIAN
DIAN PAYANT
MELODY PAYNE
SCOTTY PAYNE
ELIZABETH PEACOCK
DOUG PEACOCK
JOHN PEARCE
BONNIE PEARSON
FRANK PEARSON
L E PEARSON
RONALD M. PECK
JOE PEDRO
JOE G PEDRO
PHILIP C PEICK
WAYNE L. PELLEY
PETER W PELLITIER
RICHARD PELO
YVONNE PEPIN
ADAM J. PEREZ
EDWARD S. PEREZ
WELDON PERGESON
C Y. & PAT PERKINS
ANNE PERLEY
EDGAR W. PERRINE
JAMES PERRINE
RONALD J PERRINE
JEREMIAH PERRY
JOHN PERRY
PATRICIA T PERRY
ROBERT L. PERRY
J. LYNN PESTER
MARK PETER
J KEITH PETERSEN, PH.D
JIM G. PETERSEN, D.M D , P C.
KELLIE PETERSEN

NANCY PETERSEN
LARRY PETERSON
MICHAEL PETERSON
PHILIP S PETERSON
DALE PETITE
JAMES PETRIE
KEITH PETTIS
BONNIE PETTIT
DON PETTIT
DEAN PETTY
MARY E. PETTY
RALPH PETTY
JERRY PETTYJOHN
MARIE L. PFAFF
CLE ORA PFLUGRAD
DAN D. PFLUGRAD
MRS. DAN PFLUGRAD
TERRY PFLUGRAD
LARRY PHALAN
JAMES A PHEGLEY
KAREN PHEGLEY
DELTA PHELPS
MRS GRADY PHILLIPS
HAL PHILLIPS
JUNIOR PHILLIPS
SHANE PHILLIPS
WILLIAM J PHINNEY
FRANK PIATT
WILLIAM PICHELL
EUGENE PICKERD
DEBBIE L. PICKERING
GORDON P. PICOTTE
ARTIE G PIERCE III
CANDANCE N PIERCE
DUANE PIERCE
J D PIERCE
LINDSEY PIERCE
G. H PIERSON
JOSEPH D PIGGOTT
BRUCE M. PIKE
LLOYD & JAN PIKE
MARK PINCH
S PINEAU
DAVID E. PIPER
DELBERT A PIPER
MELVIN R. PIPER
JUAN PIREZ
BETTY L. PITTS
FLOYD PITTS
GRANT H. PITTSER
BOB PLATZ
JOHN & JOANNA PLIMLEY
WARREN PLOCHARSKY
JAMES A PLUGH
LISA PLUMMER
JONI PODOLSKY
LEROY POE
RICHARD L. POIRIER
BRUCE & JODI POLARD
DON POOL
SANDRA C. POOL
M. F. POOLE
A LEE PORTER
BILLY R PORTER
BYRON PORTER
DARON S PORTER
JERRY PORTER
LINCOLN PORTER
RICHARD PORTER
HARVEY L. POST
MARTHA POST
GARY I POTTENGER
FRANCIS & JUNE POTTER
CHARLES POTTS
JACK POULSOR
DAVID & JUDITH POWELL
GARY POWELL
J. W POWELL
EARL POWERS
JIM POWERS
MERIBETH POWERS
ROGER POWERS
ROY F POWERS
RICHARD D PREAS
CLARA PREHODI
JOE PRESLEY
OLIVER W PRESS, M D , PH.D
STEVEN M. PRESTAN
DOUG PRICE
JOY N PRICE
J. ANNAN PRIDAY
PATRICK L PRIDGEN
CLIFF PRIMM
TAMMY S PRINCE
TOM PRINCE
JON V PROCK
BRET PROUTY
MELODIE A. PROVENCHER
KENNETH PRUITT
MILO PUDERBAUGEN
MARYANNE PULLAM
PATRICK L. PULLAM
JAMES PULLEN
FLOYD VANCE PUMPHREY
ELLEN M. PURCELL
KENNETH R PURIN, SR
DOROTHY PURYEAR
ROBERT A. PUTNEY
RICHARD & LEOLA QUESENBERRY
GEORGE QUICK
EARL QUINN
MATT A QUINN
PHIL RABB
L. J RABUN
MR. & MRS. ANDREW RACEY
THOMAS J RACHAN
RON RADEMACHER
CHARLES C RAINES
WILLARD RAINES
DAVID T RAINEY
CLIFF RALST
AVIS RANA
RANDY RANDALL
MARY RANDLES
GRETCHEN RANDOLPH, PH D.
KATHY RANKIN
TIM RANKIN
TERRY RAPE
HAROLD E. RAPER
DANIEL L. RAPHAEL
GREGORY A RAPP
ALAN R RASMUSSEN
DONNA RASMUSSEN
JIM RASMUSSEN
S. T. RASMUSSEN
TERRE SEITZ RASMUSSEN
G R RAUENHORST
ROBERT RAUN, SR
MARY & BURDITTE RAWLINGS
DEBBIE RAY
LES RAY
RANDY RAYBURN
VALERIE RAYMOND
JOHN REBERS
KATRINA REED
MONTE L. REED
SCOTT REED
TOM REED
WILLIAM A REED
A J REEVES
RICHARD R REEVES
JANICE REHDER
ROBERT A. REHDER
WILLIAM REHDER
KURT & LINDA REIBER
CHAS & JEANNETTE REICHERT
LEONA REID
RAYMOND E. REID
TERRIE REMINGTON
ARTHUR G REMPEL
LUCILE E. REMPEL
NANCY E RENCKEN
RUDY G RENCKEN
FRANK RETHERFORD
KENNETH & SYLVIA RETHERFORD
JAMES W. REYBURN
ALVIN L REYNOLDS
BRUCE REYNOLDS
LIZBETH A. REYNOLDS
PEGGI L. REYNOLDS
RODNEY R REYNOLDS
ROYCE R REYNOLDS
ZACK REYNOLDS
JENNIFER RHOADS
DALE RHODE
ARCHIE J. RHODES
CLIFFORD M RHODES
DEBORAH R. RHODES
EVERETT L. RHOTON
HOWARD RHOTON
THELMA RHOTON
BOB RICE
CLARENCE F. RICE
MIKE RICE
CLINT RICHARD, JR
DORIS RICHARDS
W T RICHARDS
WAYNE RICHARDS
BARBARA RICHARDSON
DEBORAH RICHIE
AVRIL L. RICHMOND
MERTON A RICHMOND
JAMES RICHTER
HENRY RIDDLE
MICHAEL RIDDLE
PARK RIDDLE
TERRY RIDDLE
GARY W. RIDENOUR
PENNY RIDENOUR
LEONARD E. RIDER
JOSH RIDLEY
DALE L. RIEDEL
PAUL H. RIEGER
MARK E. RIETMAN
TAMI RIETMAN
BILLY J RIETMANN
MARILYN A RIETMANN

LLOYD D RIGGS
DELLA RIMMELSPACHER
ED RIMMELSPACHER
ALBERT A RINALDI, JR
LEE RINGER
MARLA J. RINGER
FLOYD RINGERING
NANCY L. RISSER
STEVEN E. RITTER
JEFF ROACH
LORI A ROACH
ROGER L ROBBENNOLT
CHARLES R ROBERTS
EVERETT R ROBERTS
IVAN & AGNES ROBERTS
JAMES C ROBERTS
RON ROBERTS
ROBERT ROBERTSON
DEBBIE ROBINETT
J ROBINETT
ROBERT L. ROBINETT
STEVEN ROBINETT
RON ROBINS
SHARON ROBINS
CRESTON O. ROBINSON
DONALD O ROBINSON
KATHRYN E ROBINSON
KIMBERLY J ROBINSON
KIRK L. ROBINSON
PHIL ROBINSON
SUE RODEN
MARK RODIGHERI
VERNON R RODIGHIERO
CHRISHA ROE
ELIZABETH J ROE
KATHY ROE
MELVIN ROE
MONTY ROE
SCOTT ROE
TED ROE
TRISHA ROE
RICHARD R ROEHLING
BARRY H ROESCH
WILLIAM H. ROESCH
O J ROESLER
VINCENT C ROFF
ALICE J. ROGERS
ARDIS ROGERS
DAVID M ROGERS
JARED C ROGERS
KAY L ROGERS
LLOYD ROGERS
SHERI L. ROGERS
TED ROGERS
TOM ROGERS
VICKIE ROGERS
WAYNE ROGERS
WILLARD E ROHDE
RICHARD ROHL
JOHN O. ROISUM
HELEN ROLOFF
PHILLIP M. ROMERO
GERALD RONAN
KEITH RONDY
JIM RONNING
KAY ROOD
LARRY ROOD
LELAND D ROOD
JOE ROSE
RAY V ROSE, M D
MARY LYNN ROSENE-TOWNSEND
DALE & ALI ROSS
JUDD ROSSUCK
ERNEST L. ROSTOCK
LARRY ROUMPF
JOHN A ROWELL
JAMES ROWLES
MICHAEL A. ROXBECAF
THOMAS R ROY
DON W ROYER
GEORGE ROYES, JR.
HEIDI RUARK
STEPHEN RUBIN, PH D.
RON RUDDELL
ROBBIE RUDE
TOM RUDFLET
WILLIAM A RUFF
M J. RUGG
MITCH RUGG
R B RUGG
RICHARD RUGG
SHIRLEY RUGG
KATHLEEN K. RUGGERI
ROBERT W RUGGERI
LERAY RUNDALL
DAVID A RUSSELL
EVELYN L RUSSELL
L D. RUSSELL
MICHAEL RUSSELL
TINA RUSSELL
ELANA RYAN
JUDY A. RYAN
RENATE RYAN
THOMAS RYAN
D. D RYERSE
DAVID N. RYNEARSON
JAMES D RYNEARSON
GENE A RYSDAM
JERRY RYSDAM
JOHN E. RYSDAM III
ADA W SACRISON
BOB SACRISON
SHARON SACRISON
CAROL SADLER
PAT SADLER
WAYNE A SAFFORD
ROBERT SAILER
EDITH ST. HILAIRE
HELEN BAKER ST JOHN
RON W SAKEN
WILLIAM E SALES
MIKE & EILEEN SALING
MARIE A SALLEE
ROBERT SALLEE
SLIM SALMAN
DAVID H SALMON
RONDI M SALVA
TONY SALVA
DAN SAMS
ANNE M SANBORN
ROD SANCHEZ
TRAVIS SANDAU
CRAIG SANDBLOD
EARL R SANDERS
NELLIE SANDERS
ROSE SANDERS
STEVE SANDERS
WARREN L SANDERS
BILLY J SANDERSON
MINDY SANDLER
JAMES D SANDLIN
JEFF SANDLIN
PATRICIA SANDLIN
DON SANDS
LAURA LEE SANDS
RONNIE SANDS
JAMES A SANFORD
JAMES SANSOM
GENE P SARGEANT
HELEN M SARGEANT
DICK SARGENT
EDWARD SARGENT, M D
JACK SARRETT
FRANCIS Z. SASSER
MICHAEL S SASSER
ALLEN SATO
ETHEL SAUNDERS
RICHARD W. SAUNDERS
ALMA SAVAGE
JOE SAVAGE
JOHN SCALF
DANIEL SCARL
CHARLIE A SCERON
KERRI SCHENKI
BOB SCHEULEN
SUSAN SCHILLING
CINDY SCHLEE
JAKE J SCHLEE
MRS. JAKE SCHLEE
RANDY SCHLEE
STEPHEN C SCHLEGEL
ELIZABETH A SCHMEDER
GLENN SCHMEDER
KEN, MYRA, & JANIE SCHMID
BURTON W SCHMIDT
GERALD SCHMIDT
RICHARD R SCHMIDT
CARL SCHMITTLE
DAVID F SCHMITZ
JERRY D SCHNEIDER
TIM SCHNELL
TERRY SCHOCKE
MYRON SCHOEK
KEAL SCHOEMAKER
JIM SCHOENWALD
JAN SCHOOLCRAFT
LEE SCHOOLCRAFT
LAWRENCE SCHOONOVER
MISSY SCHOONOVER
SHARON SCHOONOVER
JOSEPH C. SCHOTT
MARTIN SCHRAHEUHOLZER
R. E SCHREIBER
ALBERT B SCHRIVER
GWYN & THOMAS A SCHROEDER
KIRK SCHROEDER
JERRY SCHUBERT
ANDREA SCHUENING
MICHAEL W SCHUENNING
DORENE SCHUETTE
JERRY A SCHULKE
JANET G SCHULTHEIS
CHRISY SCHULTZ
ERIC SCHULTZ
LINDA J SCHULTZ
ROBERT R SCHULTZ
STEVEN R SCHULTZ

DOUGLAS SCHURMAN
MERLIN H SCHUT
JOHN H. SCHWAB
ANN B SCHWARZ
LEN RAY SCHWARZ
PATRICK K. SCHWARZ
RON SCHWARZ
TED R. SCHWARZ
FELIX H SCHWARZIN
DUANE SCHWEBKE
BILL SCOTT
BLAKE SCOTT
CLAUDE SCOTT
CLIFFORD SCOTT
DON SCOTT
DOUGLAS SCOTT
JESSIE E. SCOTT
NYODA SCOTT
PERRY A. SCOTT
ROD SCOTT
ELLIE J. SCOUKES
DONALD SCRIBNER
GORDON SCRIBNER
GRACE E SCRIBNER
KEVIN SCRIBNER
TOM SCRIBNER
JOHN W SCRUGGS
CAROLYN SEACHRIS
JENNIFER SEAVEY
D. D SEEGART
DEANNA R. SEELYE
HAROLD R SEELYE
WAYNE & LORI SEITZ
CORAL A. SELMAN
THOMAS P SENENS
JERRY E SEREET
PETER V. H SERRELL
BEV SETZER
BECKY SEVISHER
JAMES G. SEWELL
DORIS J SHAFER
NED SHAFER
VICKI SHAFER
WES SHAFFER
R R SHAMANN
WILLIAM F SHAMBO
JOHN P. SHANNON
BOB SHANTIE
JIM E SHARP
MICKEY SHARP
MISCHELLE SHARP
DALE SHAURETTE
E. GERALD SHAW
GARY SHAW
MARGUERITE SHAW
MONTY SHAW
ORVILLE W SHAW
THOMAS J SHAW
WILLIAM L. SHAW
DELAINE SHEA
JOHN SHEA
CLARENCE SHEARER
PEARL SHEARER
ANNE L. SHEELER
DIANE SHEETS
JASEN SHEETS
SHANE R SHEETS
SANDRA SHELIN
ARTHUR SHELMAN
GUY T SHELTON
L. M SHELTON
LISA D. SHELTON
TOM SHELTON
DAVE SHEPHERD
JAMES F SHEPHERD
KEVIN F. SHEPHERD
EVAN SHERMAN
MADONNA SHERMAN
MICHAEL L. SHERMAN
WILLSON A SHERMAN
ROD SHERTT
MARC G. SHIELS
KIRK SHIRA
EDITH SHIRLEY
LARRY D. SHIRLEY
ORVILLE D SHIRLEY
RON SHIRLEY
DENNIS SHIRTCLIFF
JAMES O. SHOWN
VERNON SHOWN
DAVE SHROCK
RON SHULL
JOHN P. SHUMAKER
TERRY L SHUMAKER
JIMMY A SHUMAN
SHARON M SHUMAN
WILLIE A SHUMAN
CACE C. SIDOTI
BOB & DIANE SIEBERT
GEORGE SIELER
SHELLY LYNN SIELER
DONALD D SIEVERS
BEN SILVA
BETH SILVA
ERNIE SILVA
KATHLEEN SILVA
LAURA SILVA
MARK SILVA
NINA SILVA
TODD SILVERSTEIN
MARK SIMMENS
ALFRED SIMMONS
BRIAN SIMMONS
DELO J. SIMMONS
DEWAYNE SIMMONS
FREDA SIMMONS
JOHN L SIMMONS
WAYNE SIMMONS
ALVIN H. SIMMS
S. J SIMON
CAROL SIMONISZ
TOM SIMONTON
ERIC SINES
HARVEY SINES
PAUL SISSON
GORDON SITZMAN
GINGER SKAIFE
TIMOTHY LEE SKEELE
LARRY SKELLENGER
ROY SKEZ
BRUCE SKVARCH
KELLEEN D SLANGERHAUPT
JOHN SLATT
GARY SLAVIN
L. RENEE SLENOTZ
DONALD D SLOAN
LOUIS D SLOAN
WANDA R SLOAN
DUANE SMALLEY
DELCI SMALLRIDGE
TROY L. SMART
CHAD SMELTZER
AL SMITH
ALICE SMITH
BARBARA L. SMITH
C. T SMITH
CARTER SMITH
CHARLES T SMITH
DALE SMITH
DAVID V SMITH
DENNIS SMITH
ERNEST P SMITH
F S SMITH
GARY SMITH
GARY N SMITH
GEORGETTA SMITH
GERALD SMITH
GILBERT G SMITH
GORDON L. SMITH
HAROLD W. SMITH
JAMES A SMITH
JERRY D. SMITH, SR
KENNETH E. SMITH
KIM L SMITH
LANETTE E SMITH
LARRY G SMITH
LEO R SMITH
LEONARD W. SMITH
M STANLEY SMITH
MARK S SMITH
MERLE H. SMITH
MICHAEL S SMITH
MILTON M. SMITH
PATSY SMITH
PEARL E SMITH
RANDY R SMITH
RICHARD SMITH
RICHARD E SMITH
ROBERT W SMITH
RODNEY O SMITH
RON E SMITH
ROYCE L SMITH
RUSSELL L. SMITH
STEPHEN A SMITH
STEVEN R. SMITH
THOMAS H SMITH
TIM SMITH
TOM SMITH
TONY SMITH
WILLIAM L. SMITH
CLINT SMITHE
RON SMITHRUD
PAUL SMUD
LARRY SMYTHE
DANIEL LEE SNACK
DOUG SNACK
C M. SNAVELY
DEANNA M SNIDER
EDITH A SNIDER
LEONARD E SNIDER
TIMOTHY L SNIDER
JOSH SNOW
LEONARD E SNOW
OWEN SNOWBERGER
BILL SNYDER
JODY SNYDER
ROGER S SNYDER

TERRY L. SNYDER
TIMOTHY J. SNYDER
TOM SNYDER
WAYNE SNYDER
JAMES M. SOARES
MARILYN M. SOARES
C SODERBERG
ROLAND G SOFT
BENIT SONCHEY
EUGENE C SONSTJARD
CARL M SORENSON
FRED SOTINE
CLARENCE SOUTHAND
KING E. SPAIN
MERLE J. SPEARS
GEO. N SPEARS, JR.
ELLIS E. SPEER
MARK W SPEER
RANDALL E SPEER
DANIEL SPENCE
JOSEPH SPENCE
ROBERT SPENCER
WILLIAM SPENCER
RALPH A SPERBER
BETH SPICER
DEBORAH D SPICER
JAMES L SPICER
RODNEY O SPIKES
JONATHAN L SPILKER
FRANK SPINEY
CLYDE SPIVEY
PATRICIA J. SPIVEY
BRIAN SPOELSTRA
DEBBIE SPOELSTRA
SHIRLEY SPOMER
CHARLIE SPONCEY
FREDERICK W SPOONER
DALE A SPOOR
MICHAEL L. SPRAG
GARY R. SPRAGUE
ROBERT SPRIGGEL
IRA L. SPRING
DOUG SPROED
DARRELL STACEY
LORETTA STACEY
KIMMIE STAFFORD
THOMAS & JUNE STALLWOOD
N STANDERFER
RUSSELL STANDHOLM
JOSEPH N STANGEL
RICHARD STANGEL
ROBERT B. STANGIER
BARBARA STANLEY
RAY STANLEY
ERMA STANTON
JAMES STANTON
KENNETH D STANTON
TOM STANTON
VERA STANTON
KIMBERLY A STARR
L. R. STARR
BOB STEAGALL
DONALD & NEITA STEARNS
LEACH M STEEL
WILLIAM K STEELE
CHRIS J STEIN
DANIEL E STEIN
W STEIN
CALVIN R STELLING
ROSS J. STENKAMP
CORINNE STENNETT
DALE STENNETT
STEVE STENSON
CHARLES A STENSRUD
DON R STEPHENS
JERRY STEPHENS
LEE STEPHENS
WAYNE STEPHENS
LINDA L. STEPHENSEN
KEN STERTZ
DAVID STEVENS
FORREST STEVENS
JERRY STEVENS
RICHARD G. STEVENS
STANDLEY STEVENSON
STANLEY R. STEVENSON
WENDY U STEWARD
JOHN STEWART
JOHN C. STEWART
LES D STEWART
KIMBERLY M STIDHAM
RODNEY L. STIDHAM
GERALD & CAROL STILLER
BERYL L. STILLMAN
SUSANA JO STILLMAN
ELIZABETH STINES
EUGENE E STINES
EFFIE L STIREWALT
GREG STOCKDALE
MARK Z STONE
SARAH ZIPF STONE
STEVEN L. STONEBREAKER
KENNY STOOKEY
MIKE STOOKEY
KENNETH STORALL
DONNA STOREIDE
RON STOUT
PATRICIA A. STRAND
OTIS STRANG
SHIRLEY STRASSER
RONALD J STREAM
JAN STROBECK
ALAN L. STRONG
D. L. STROUD
JIM STROUD
KEN STULTZ
ANNE STUMP
MICHAEL E STUMP
TRACEY B STUMP
ALAN L STUVLAND
BRUCE STUWE
TIM SUDBROCK
CHARLES SUITTER
CORLYN SUITTER
DANIEL J SULLIVAN
DIANNA SULLIVAN
GLORIA J SULLIVAN
JOHN SULLIVAN
RAY SULLIVAN
SHERI L. SULLIVAN
CHARLIE SUMNER
ART SUNDERLUND
STEVE SUNDQUIST
JOHN B. SUTHERLAND
MARGARET SUTHERLAND
SAMMY SUTLER
LUELLA A SWAGGART
MERLE C SWAGGART
HOWARD A SWAGGER
JENNY SWAGGER
PAULA N SWAGGER
BOYD SWANSON
CHRIS SWANSON
CHUCK SWANSON
JOHN R SWANSON
JULIE SWANSON
LIZ SWANSON
LOREN SWANSON
ROBERT L. SWANSON
LEON SWARTZBERG
GREG SWEENEY
CHARLES SWEISBERGER
OPAL L. SWEISBERGER
MATT SWENSON
GUSTAV W SWORD
BRENDA SYRIE
CLIFF TABER
EUNICE L. TABER
JOHN E TACKETT
DAVID TAFT
WINIFRED TAGGART
MRS. G R TAGUE
GARY R TAGUE
MILES TAGUE
ROBERT TALBOTT
TERRY TAMS
BOYD M TANDY
DARVIN G TANGEY
LIZ TANKE
DARRYL TAPP
JAMES M TARDIF
ALECIA C. TARNASKY
ANTHONY J TARNASKY
ED TARNASKY
SHARIDAN TARNASKY
JAMES C TATE, JR.
CLARENCE TAYLOR
DAVID M TAYLOR
MILTON A TAYLOR
MRS. NORTON TAYLOR
NELLIE TAYLOR
ROBERT TAYLOR
ROBERT R TAYLOR
MELVIN H TEAL
WILMA J TEAL
JO RAE TEASLY
PHIL TEASLY
KEVIN D TEATER
TERESA TEATER
PAUL W. TEELEY
LUBY TEEM
HARRY TEILMANN
JUAN A TELLICKEA
SEAN A TELROURUM
J CHARLES TEMPLETON
WILLIAM L TEMPLETON
NANCY L. TEN EYCK
JESS TENER
CLIFFORD E. TERRY
JOYCE TERRY
LAWRENCE E TERRY
PAUL W TERRY
PAULINE M TERRY
DENICE TESSURI
LINDA TESTERMAN
STEVE TESTERMAN
TIM TESTIRNE

S W. TEUBNER
LESLIE W THATCHER
R W THEABOIT
JOHN THEALY
LISA THERRELL
GENE THIESSIN
GEORGE THOMAS
JAMES L THOMAS
MARVIN THOMAS
STEPHEN J THOMAS, M.D.
WALDO THOMAS
GARY A THOMASON
R. R THOMASSEN
ALBERT THOMPSON
ARTHUR L. THOMPSON, JR.
DANIEL V THOMPSON
DAVID B THOMPSON
JESSE THOMPSON
JOHN C THOMPSON
LARKIN THOMPSON
LARRY R THOMPSON
LESLI THOMPSON
PAUL B THOMPSON, M D
ROBERT THOMPSON
TED THOMPSON
TERRY THOMPSON
THOR THOMPSON
VICTOR THOMPSON
VIRGINIA THOMPSON
WILLIAM N THOMPSON
FRED THOMSEN
WILLIAM H. THOMSON
TOM THOMTON
BILL THONBREY
WILFRED & FAITH THORN
HON MIKE THORNE
JEFFREY THORNE
DORA P. THORNTON
JOHN M THORP
CARL THORPE
MAX THURBER
RANDY THURMOND
MARTIN L. TIBBETS
BEULAH TILLEY
RICHARD L. TIMM
L. R. TIMMERMAN
MANIN TIMMONS
MARGARET TIMMONS
BRAD TINHOF
DENNIS M. TIPTON
ARCHIE TITUS
CLAY TODD
JAMES S TODD
R S TODD
RONALD L. TOKAR, M.D., P.C
DORIS TOLECH
GLEN TOLLEY
BRENDA TOM
DAN TOMPKINS
EDWARD TONEY
L L TONEY
RONALD TOONEN
WILLIAM E TORRENCE
JEFFREY L TORRETTA
LINDA E. TORRETTA
RAYMOND TORRETTA
RON TORRETTA
NORMA TOUVE
WAYNE TOUVE
DENNIS TOWNSEND
ED TOWNSEND
JUDY TOWNSEND
RANDALL E TOWNSEND
GERALD TRADER
MARTIN TRAIL
JEFFREY R TRAUM
KIRK J TRAVIS
NANCY TREEBLOOD
MARK TREEL
CECILE M. TRESHAM
MIKE TRESHAM
TIM TROMBETT
WILLA DEAN TROOP
DONNA TROXELL
KEVIN TROXELL
KRYSTAL TROXELL
MIKE TRUMBULL
CECIL TRUMP
CHARLES & ELLA TRUMP
GERALD TRUMP
JAMES H TRUMP
ROBERT TRUX
GLADYS TRZCINSKI
DAVID C TSHAPPAT
GREGORY TSIATSOS
EVERETT & MARIAM TUCKER
RELTA & STANLEY TUCKER
LOREE TUCKER-MCKENNA
ROBERTA TULLIS
DWAYNE TUMMS, JR
JOHN W. TURBYNE
FRED G TURKHEIMER
DAN G. TURLEY
GLORIA TURLEY
TOM TURNBOW
BARBARA TURNER
BASOL TURNER
BOB TURNER
DAIL TURNER
DELBERT TURNER
IVA D TURNER
JEANETTE C TURNER
KEN TURNER
LESLIE L TURNER
MARIE TURNER
NANCY TURNER
RANDY TURNER
RONALD TURNER
STEVEN W TURNER
STEVE TVEIL
KARI L TWEAT
ARTHUR TYLER
MARLENA UBE
ROY D. ULMEN
WAYNE ULMEN
RON UMBARGER
KRISTIAN S UNGERN
RAIMUNDO URIANTE
KENNETH L UTTER
TOM UTTER
ROBERT L VAIL
DENISE VAILS
FLORENCE F. VAILS
MILDRED O VAILS
RICHARD A VAILS
ROD VAILS
WALTER VAILS
JOHN & DONNA VAN ACKEREN
BARBON VAN ARSDALE
GARRY VAN ARSDALE
GARY VAN ARSDALE
BEN VAN CORBACH
DAVE VAN DE GREAFF
JULIE VAN EPPR
CARY G VAN EPPS
KENNETH A VAN EPPS
SANDRA N VAN EPPS
DAVID VAN HOOK
EVAN VAN HOUTTEN
CHRISTINE VAN LANDUYT
D J. VAN LANINGHAM
DENNIS VAN LEUVEN
RALPH D VAN LEUVEN
LINDA VAN NERMAN
ANNE VAN SCHOIACK
MARIE VAN SCHOIACK
MIKE VAN SCHOIACK
ROBERT VAN SCHOIACK
WILLIAM C. VAN SCHOIACK
DEREK VAN VEEN
T LOUIS VAN VOORST
JIM VANDERVATE
ELLIE VANETTE
BRYAN W. VANHOFF
BEVERLY VANSICKLE
DALE VANSICKLE
ROBERT & JULIE VANTRIASE
TONY VASS
MARTIN J VELEZ
DAVID VENNERI
GORDON VENNERI
RON VENNERI
JUNE B VERNAM
MELVIN VERNON
RANDY VERRALL
DAN VGLESBEE
ALVIN VINSON
PAUL VISLAUGH
M B VITUS, JR
JOHN VOLLE
NORBERT VOLNY
WADE VOLWILER, M D
TIRK A. VOORHERS
GEORGE VRQUHART
TONY VUKSIGH
DANIEL J WADOSKY
ALICE M. WAGNER
ALLEN WAGNER
WALTER L. WAGNER
WILBUR WAGONER
STEVE WAIBEL
BRIAN WALDCOP
ALLAN ROBERT WALDMAN
JIM L. WALISER
KENT WALISER
BETTY WALKER
BRENT WALKER
CHARLES V. WALKER
ELSIE WALKER
GENEVA A WALKER
JIM WALKER
JOANNE E. WALKER
KAREN WALKER
LEWIS WALKER
LORI WALKER
MELINDA S WALKER
MELVIN F WALKER

RON WALKER
RONALD WALKER
SAMUEL & RACHEL WALKER
STEVE WALKER
CHRISTINE WALLIN
GEORGE E WALLINGFORD
STEVE WALSBORN
THOMAS E WALSH
D WALT
ANN T. WALTER
DARRIL WALTERS
E E WALTERS
GENE WALTERS
DAVID G WALTON
PATTI WALTON
PAUL WALTON
SUE WALTON
CAROLINE B WARD
CHARLES C WARD
GARY L. WARD
JAMES D WARD
JESSICA N WARD
NANCY J WARD
RANDY WARD
ROBERT D WARD, JR
ROBERT D. WARDRIP
DONALD G WARNER
DOUGLAS R WARNER
MARY WARNER
ROBERT E WARNICK
JOHN E WARNING
ETTAL WARREN
GLENN WARREN
GREG WART
MIKE & SHARON WART
RICH WASEM
ALFRED C WASHBURN
KAY E. WASHBURN
RANDALL D WATERHOUSE
GEORGE WATERLAND
BOBBI WATERS
J E WATERS
MIKE WATERS
NANCY WATERS
GARY WATKINS
HOWARD WATNE
CASSY WATSON
ED WATSON
GARY WATSON
KATHRYN WATSON
ROSE M WATSON
THOMAS WATSON
WILLIAM N WATSON
LEONARD WATTERSON
NEIL WATTERSON
DICK WATTS
JULIA WATTS
ROGER B WATTS
ERIC WAULMER
JERRY R WAXBOM
NEIL L WAXBOM
ROY WAXBOM
MARION L WEAKLEY
JOSEPH WEARY
LEONARD WEATHERFORD
CLARA B WEATHERLY
DAYNA WEATHERLY
W H WEATHERLY
CLYDE C WEBB
GARNET M WEBB
DANIEL E WEBSTER
GINGER WEBSTER
JAMES R WEBSTER
VICKIE WEDGEWORTH
J T WEDNER
BOB WEEKS
L M WEEKS
ROBERT L. WEEKS
LARRY WEHDE
BEVERLE WEIDNIR
RICHARD J. WEILAND, JR , M D
ROBERT G WEINBERGER
STEVE WEISHAAR
LUCY WEISS
STEVE WEISS
NICHOLAS & CHINA WEITZER
GARY S WELBERG
HOBY WELCH
MERRITT E WELDIN
THELMA WELDIN
BARBARA E WELLER
CHARLES WELLS
DAVID L WELLS
DOUG WELLS
ERNEST R WELLS
MONTE R WELLS
MRS MONTY R WELLS
RUTH C. WELLS
VERONICA L WELLS
MICHAEL L WENICK
DEWAYNE L WENTZ
AMY LOU WERST
LAVERNE WERST
NORMAN WERST
VERN B WERST
DONALD WERT
BRIAN S. WEST
EDWARD R WEST
GIB WEST
JAMES A WEST
STEVE WEST
STEVEN B WEST
KENNETH L WESTFALL
BERT WHEELER
CORAMAE E WHEELER
DALE G WHEELER
DENNIS L. WHEELER
JERRY WHEELER
JOSEPH WHEELER
MARK WHEELER
RAY WHEELER
ROBYN R WHEELOCK
ROBERT J WHELAN
ARNOLD E. WHITE
DAVID L WHITE
JON E WHITE
LOREN H WHITE
MARIE WHITE
RICHARD WHITECOTTON
BARRY WHITEHILL
JAMES A WHITEMAN
R L. WHITFORD, D V M
ROBERT WHITNEY
KATHLEEN WHITSON
ROGER & JUNE WHITSON
JAMES W WHITTAKER
STEPHEN R WHITTEMORE
DARVE A WHITTEN
VERNER A WHITTLE
IKE WHITTLESEY
ROGER WHITTLESEY
TREVOR WHITTLESEY
SCOTT WHYBARK
STEVE WICKERT
DAVID WICKIOUE
JAMES B WICKLANDER
TOM WICKLUND
EARL ARNE WIDMAN
FRED WIDMAN
JAMES L WIDNER
WILLIAM W WIDNER
BRYON WIEDEMAN
MICHAEL W WIEDEMAN
KURT WIELAND
WALT WIER
DONNA M. WIES
PAM WIETERS
MARK WIGG
GARY E WIGHT
JERENE C WIGHT
DAVID A WILBANKS
MRS DAVID A. WILBANKS
LEON M WILBANKS
SANDRA WILCOX
ALBERT K WILEY
ALFRED WILHELM
EDNA WILHELM
ELLEN R. WILHELM
LES C WILHELM
GARY WILKINS
LES WILKINS
SUSAN H WILKINS
DAVID I. WILKINSON
DICK WILKINSON
SHIRLEY J. WILKINSON
STEVE WILLETT
RICHARD D. WILLHITE
SUSAN A WILLHITE
ALLEN H WILLIAMS
CHARLES J. WILLIAMS
DALE WILLIAMS
DICK WILLIAMS
DONALD L WILLIAMS
ETHELYN L WILLIAMS
HARLEY L WILLIAMS
JACK H & WANDA WILLIAMS
KING WILLIAMS
LEO WILLIAMS
MAURINE WILLIAMS
MIKE & VIRGINIA WILLIAMS
PATRICIA R. WILLIAMS
ROBERT WILLIAMS, JR
SUSAN WILLIAMS
JOHN H WILLIAMSEN
ANTON WILLIAMSON
BETH WILLIAMSON
WILLIAM L WILLIAMSON
FLOYD WILLINGHAM
ARCHIE WILLIS
CARL E WILLIS
D CHRISTINE WILLISCROFT
R G WILLISCROFT
M KEVIN WILLMAN
STEVEN C WILMOTH
DALE E WILSEY
LEE WILSEY
LINDA E WILSEY

MICHAEL N. WILSEY
ALEN L WILSON
BOB WILSON
DANNY WILSON
FRANKLIN D WILSON
HOWARD WILSON
JAMES B WILSON
JASON WILSON
L E WILSON
LEE WILSON
MELVIN E. WILSON
NANCY J WILSON
PHILIP S WILSON
RICHARD C. WILSON
ROGER WILSON
RON WILSON
SUE WILSON
TERRI WILSON
THOMA M WILSON
THOMAS C. WILSON
THOMAS R WILSON
TRACEY WILSON
WANNITA P. WILSON
WARREN J WILSON
STACY WILT
EVAN E WINDSOR
RUSSELL S WINGER
PAUL WINKLEMAN
ROLLIE WINKS
BELINDA G. WINN
DENNIS WINN
BOB WINSLOW
DEBORAH D WINTER
JACK L. WINTER
ROBERT WINTER
DR JOHN D. WINTER
DONNA WINTERS
MICHAEL G. WINTERS
RANDY D. WINTERTON
FOSTER H WISE
WEELEY WISE
W. T. WISHICK
P LOUIS WITHER
CARL D WITHERSPOON
DALE WITHERSPOON
JAMES L. WITHERSPOON
THOMAS R. WITHERSPOON
DONALD G WITTE
NEVA WITTEN
ROBERT WITTER
ARNOLD WITTROCK
GEORGE F WOLCOTT
DONNA WOLF
WILLIAM WOLFORD
MORTON V WOLVERTON
WILLIAM & EILEEN WONDRA
CAROL WOOD
DARRELL D WOOD
DENNIS WOOD
DWIGHT WOOD
MICHAEL G WOOD
NELLIE M. WOOD
TINA L WOOD
RICK L. WOODALL
RICHARD G. WOODHALL
ROBERT E WOODLEY
CHUCK WOODS
BERTA & WOODY WOODWARD
WILLIAM G WOOLARD
JOHN & KIM WOOLDRIDGE
JOHN WOOLLEY
CHARLES & GAIL WOOSLEY
GEORGE WOOTEN
LISA WOOTON
RICHARD L WORDEN
KENNETH G. WORTMAN
RANDY WORTMAN
ROBIN L. WORTMAN
BARBARA WRIGHT
C WRIGHT
CAROLYN E WRIGHT
DAVID WRIGHT
DAVID L WRIGHT
DON V. WRIGHT
JENNETTE WRIGHT
KEITH E. WRIGHT
LARRY WRIGHT
LEUL A WRIGHT
MICHAEL WRIGHT
MILDRED WRIGHT
R DWAYNE WRIGHT
RICK WRIGHT
RON WRIGHT
VIRGIL A WUNDER
DEAN WYATT
WAYNE WYATT, JR
DELEEN WYLAND
DAVID C WYMAN
PETE WYMAN
HENRY M YAPLE
HAROLD N YARDLEY
GLADYS YAW
ARDITH YEAGER
HOWARD W. YEAGER
LARRY YELM
JEAN YESKE
GEORGE A. YOCHUM
KATHLEEN YOCHUM
BETH YOHALEM
DEXTER YOKOM
JANET M YOKOM
JERRY M. YOUMANS
GRACE A YOUNCE
CLAY L. YOUNG
DEBORAH J YOUNG
EDWARD P. YOUNG
JACK YOUNG
LARRY D. YOUNG
ALLEN YOUNGER
COREY YOUNGER
STEVE YOUNGERMEN
LARRY ZALAZNIK
DELWYN ZALLMAN
SHEILA ZANGAR
DAVID ZEILER
MICHAEL R ZEIMANTZ
RICHARD R. ZELLER
JERRY ZEMMER
JERRY J ZEMMER
JESSE J ZEMMER
LESLIE E ZEMMER
LYLE C ZEMMER
MARVIN L. ZEMMER
DENNIS L ZENR
CECIL ZERBA
LORENE ZEWISLER
MICHAEL ZFILER
BONNIE ZICK
CARL ZIEGLER
EVELYN M. ZIEGLER
GEORGE ZIERMANN
BONNIE ZIMMERMAN
D. CRAIG ZOLLMAN
RONALD ZWART
FRED J ZWIESLER

SUMMARY OF PUBLIC COMMENTS ON MAJOR SUBJECTS

INTRODUCTION

The Forest organized and processed public comment in subject categories using procedures developed by the Pacific Northwest Region with some modification to meet local needs (see Table N-7 for a listing of most of the topics). Comments were identified based on the topics and entered into a computer; a team then analyzed and summarized the public comment for each topic area.

This section of Appendix N is a summary of the results found by the team for each major subject. The summary is an updated version of "Summary of Public Comment on the Draft Forest Plan," June 1988, based on critique by interested publics. This section is organized similarly to FEIS Chapters III and IV, it first addresses the physical and biological resources, followed by social and economic factors, and then by various planning and other general topics.

WATER, SOIL, & AIR

WATER

Respondents recognized the value of water. Many expressed a strong concern for protection of the water resource They felt water should be given at least equal value with timber, and that watersheds should be managed to protect water quantities and streams, to increase fish production, and for wildlife. One group felt old growth forests would have to be saved to protect water, fish, and wildlife. However, a large number of other respondents felt that timber harvesting would have little, if any, effect on water quality or quantity. All groups agreed that we need to protect riparian areas, but disagreed on the measures needed to achieve this goal (see summary of Riparian comments in this section).

A very large portion of the response on watersheds concerned the Walla Walla River and Mill Creek areas. Almost all respondents felt that Mill Creek should receive maximum protection with little, if any, timber harvesting. However, strong differences appeared over management of Walla Walla River; many specifically advocated maximum protection (very limited timber harvest or none at all) and many others supported the level of development shown in the proposed Plan. A good number of people was concerned about having adequate water supplies for irrigation, particularly in the Walla Walla River area.

The majority of those commenting specifically on water quality were not supportive of the proposed Plan and felt that it underestimated the negative impacts of harvest and other activities on the water resource. The greatest concerns were over the potential impacts of logging, road construction, and roads themselves on overland flow, erosion, sedimentation, and stream temperature. Others were concerned about livestock impacts on water quality. Most of the respondents who commented specifically on water quantity felt that water demand exceeded supply, and therefore water should receive maximum protection. There were many concerns about the effects of timber harvesting (mostly clearcutting) on water yields and the timing of the runoff. Others suggested that little conflict exists between timber harvest and other management activities and quality water supplies They supported effective monitoring of timber management and other activities to assess impacts, and also amendment of the Plan if monitoring established a clear need to provide additional protection.

A number of "technical" concerns was expressed One group felt that the water-quality monitoring programs were weak, should be site-specific, and provide more baseline data. Others indicate needs for: More Forest-wide watershed research; comprehensive watershed planning; expanded water quality standards and guidelines to protect water and fish; an improved discussion of the sediment model; projected environmental effects of management; data on the expected cumulative effects on water and watersheds; and expanded discussion of the results of the barometer watershed study.

An Indian tribal council asked that the Forest secure water rights to support resource management activities The State of Washington suggested that the Forest needs to address the matter of Federally Reserved Rights, and should consult with various state departments on the matter of instream flows.

SOIL

In general, people who commented about soil were concerned about keeping it in place and maintaining its productive capacity. Livestock grazing, road construction, and logging (especially clearcutting) were cited most often as agents of soil damage. Numerous comments were made that ATV's and OHV's are harmful to the soil, especially in terms of increasing erosion. Some suggested that the Forest needs to take a broader, soil ecosystem approach towards management.

AIR

All input relating to air quality suggested maintenance or improvement of air quality on the Forest. Suggested means of accomplishment include curtailing slash burning, maintaining fewer roads and thus fewer vehicles, curtailing OHV use, and providing more budget for air resource management Several respondents explained the benefit of oxygen production by standing forests.

VEGETATION

Most comments on the topic concerned current management practices that were said to detract from maximum species diversity. Respondents were especially opposed to timber harvest and called for minimized clearcutting. Other concerns included preserving more old growth, reducing or eliminating OHV use and livestock grazing (especially in riparian areas), seeding grass after timber harvest to prevent noxious weed or exotic species establishment, and increasing native plants for wildlife benefits Another concern dealt with avoiding management practices that cause fragmentation of forest areas, thereby isolating habitats from genetic contact. (Most of the comment on vegetation relates to forests and ranges and their use, and is summarized in those categories.)

Other comments centered around the need to establish indicator species for specialized habitat types (seeps, bogs, wet meadows, talus, and forest wetlands) and a terrestrial indicator species for riparian areas. Many of these respondents felt more protection for native plants and "unusual areas" was needed; some indicated that the native plant habitat inventories need to be improved and expanded It was also noted that an analysis of effects on native species diversity had not been completed.

NOXIOUS WEEDS

The largest number of respondents in the category favored an aggressive weed control program; some of these thought management techniques such as improved timber harvest, grass seeding on disturbed soils, and better control of livestock would prevent weed establishment.

Use of herbicides brought a mixed reaction, with some favoring a complete ban on herbicide use and others supporting its use to control weeds. A few encouraged the Forest Service to work with other agencies to develop biological control techniques

Many respondents, mostly agencies, called for revisions of the proposed Plan to include or improve noxious weed inventories, species lists, priorities for detection and treatment, proposed control methods, and a worst case analysis for the program.

THREATENED, ENDANGERED, & SENSITIVE PLANT SPECIES

Respondents on this topic were equally divided on whether T/E/S plants had or had not been adequately addressed. Many claimed the current level of inventory is not adequate, and that more dollars should be spent to survey all Forest acres for the presence of sensitive plants Respondents said the planning documents need more specific coverage in the monitoring section, that specific habitat protection techniques should have been stated, and that the effects of each alternative were not adequately shown. Grazing, logging and clearcutting, and OHV's were said to be detrimental to sensitive plant habitat. Others requested that a species management guide be prepared for each sensitive species. Another large percentage asked that more protection areas (such as special interest areas, Research Natural Areas, and botanical areas) be set aside.

RESEARCH NATURAL AREAS

Few respondents expressed opposition to Research Natural Areas (RNA's). Most supported the retention of the two existing areas (Pataha and Rainbow Creek), and initiation of the five proposed areas. Some respondents also supported the continued consideration of the Lost Meadow, Moore Flat, and Big Rock Flat areas. The suggestion was made that Lost Meadow and Moore Flat should be protected as long as they are being considered. A number of respondents advocated the completion of an inventory to determine if additional RNA's exist on the Forest.

TIMBER

OVERVIEW

In this section, many representative feelings and concerns were expressed, with a wide range of different opinions. Many felt that timber is a crop that should be managed, but a variety of respondents preferred it to be done in a manner that is not readily apparent and/or only in areas where there will be minimal impacts to other resources. Economic stability was a strong message and concern; however, many were less willing to tolerate timber harvest impacts on other resources to achieve it. The most tolerant seem to have direct economic ties to the timber resource.

People less tolerant of timber harvesting felt that national forest management should favor preservation, natural diversity, and environmental concerns over timber harvest. They believe the timber industry has monopolized multiple use, and that the many other uses—as important to them as timber is to others—are suffering under current trends. These citizens want more emphasis on recreation and wildlife and less on timber, roads, and livestock.

Many concerns were expressed over the effects of timber harvest on water, recreation, fish and wildlife, old growth, visual appearances, soil fertility, a sustainable forest, and future generations. Some respondents identified specific areas where past logging had left effects which disturbed them. Many were particularly unhappy with clearcutting and even-aged management stands, which they said were far more vulnerable to pests and diseases.

A number of respondents emphasized what they felt are beneficial resource effects of timber harvest on wildlife, water, and visual appearances They felt timber harvesting does not adversely affect stream flow levels, water quality, or elk numbers. These persons would like harvesting to take place in the roadless areas, old growth areas, and big game winter ranges. They also emphasize the perceived positive effects on the economic and social environment.

SUSTAINED YIELD AND HARVEST LEVELS

All comments favor sustained yield, but not everyone has same concept of what sustained yield is, or what sustainable harvest level is possible or desirable. Many stated they want sustained yield of timber products (particularly ponderosa pine), and talk of harvest levels ranging from 171 MMBF/year to 213 MMBF/year. Several claimed the Forest has an expanded potential to produce forest products (timber) over the long term and should do so. Others urged the Forest Service to think in terms of a "sustained forest" where the primary goal is not timber yield, but a sustainable ecosystem, from which timber can be harvested but at levels more compatible with other important forest uses and values. Many of these respondents supported a harvest of 81 MMBF/year.

Many respondents felt that the Forest can and should provide nondeclining harvest at the proposed plan level, present harvest (1986-87) level, or higher. Those groups and individuals supporting Citizens for Multiple Use alternative indicated that the harvest level should be increased to 171 MMBF/year with at least 35 MMBF/year of ponderosa pine. Others indicated that the available timberlands have been declining over the years (too much "locked up") thereby reducing or threatening potential timber supply. Reasons for keeping timber harvest levels (potentials) up are primarily economic and include jobs, personal income, county revenues for roads and schools, concern about taxes, and local community and economic stability. Meeting national demand was also pointed out as another reason for timber harvest at higher levels.

Several respondents felt that projected demand for the Umatilla's timber is low because impact of harvest reductions on adjacent forests had not been accounted for. A total output of 215 MMBF in 1987 points out

the importance of Umatilla timber. Many respondents stressed that timber production is compatible with the whole range of multiple uses and environmental values

Other respondents wanted a reduction in harvest levels from the proposed or recent timber sell levels. Many of these people supported Citizens Alternative E and proposed a harvest level at 81 MMBF/year. The reasons were many, but primarily related to preferences about forest management and/or perceptions about potential harvest impacts. In many respondent views, timber values and outputs were being overemphasized (and over valued) at the expense of noncommodity values. Many expressed concern about harvest levels and effects on a variety of resources including water quality and quantity, big game and other wildlife habitat, old growth, riparian areas and fisheries, recreation, roadless areas, specific sites, and visual resources. Others felt that the forest is being cut at a faster rate than it is being replaced, harvest levels can't be sustained and high harvest levels don't maintain or preserve the integrity, stability, and productivity of the Forest. As a result, many questioned the technical assumptions about demand, supply, economics, timber growth and yield, and rotation lengths.

HARVEST METHODS (Silvicultural Systems)

Much of the public response indicated a strong preference for selection cutting of some kinds, and disfavor with even-aged management, particularly with clearcutting. However, many others urged examinations of uneven-aged management where biologically and economically feasible but not at the expense of the Forest overall timber production potential. Shelterwood was mentioned, but seemingly as a substitute for selection cutting.

Selection cutting is seen by many as a way to harvest timber and leave a forest intact, as long as ponderosa pine is not high graded. Shelterwoood was thought by some to be the best way to maintain economic success and sustained yield, and also to be a benefit to regeneration efforts. Some conservationists suggested that selection cutting should be modified to include planting and assure regeneration They also suggested that harvest methods be based on an ecosystem approach to maintain structural and functional integrity, and interrelationships between soil, water, air, and vegetation. However, some industry respondents stated that clearcutting (in contrast to shelterwood) allows second growth to remain undisturbed, and thus provides more assurance of future yields.

Comments on uneven-aged management were mixed, although many appeared to favor it, in varying degrees, over even-aged management. Uneven-aged management was perceived by many as a way to best meet all resource objectives in multiple-use management—it's less destructive and more sustainable. It is thought to maintain diversity and increase resistance to insect and disease problems, and also to produce large-sized ponderosa pine. There was general support for using it in grass-tree mosaic (GTM) areas, watershed/riparian zones, visual corridors, and wildlife winter range areas. Others, however, expressed concern that if the Forest changed to uneven-aged management in a wholesale switch, insect and disease problems could significantly reduce the long-term sustainable yield level. They point out that fire, insects, disease, and other natural agents predispose much of the Forest to even-age management, with nature as its model.

Many respondents associated even-aged management practices with tree farming, monoculture, reduced long-term site productivity, and with conflicts in meeting other resource objectives. Some felt that even-aged management is illegal and violates the National Forest Management Act (NFMA). Some felt there was an agency bias in the DEIS toward even-aged management, an overreliance on clearcutting, and that the Forest did not adequately justify or establish the need for it being the preferred harvest method. Even-aged silviculture was generally supported in the management of lodgepole pine, but even here there was conflicting comment.

Clearcutting is an emotional issue for many individuals and groups, and the input was largely negative. Arguments against clearcutting say it is wasteful and expensive, requires more slash treatment and planting, forces removal of uneconomical trees, creates ugly sights, causes animal damage problems which hinder reforestation, and leads to excessive brush growth which leads to herbicide use. Clearcutting was thought by many to be detrimental to all other forest uses. Timber industry expressed the need for the Forest to explore and use alternative methods where appropriate because of the perception of resource damage resulting from highly visible alteration of the Forest.

Overall, it appears much of the public feels that the level of uneven-aged management in the draft Forest Plan is too low. A suggestion that perhaps does the most to balance the perspectives received, is that the Umatilla

National Forest should use uneven-aged management whenever it is economically and biologically appropriate.

LAND SUITABILITY & REFORESTATION

Strong opposition exists to logging land that is not suitable for regeneration because of rock, steepness, or other reasons. Respondents say to base allowable cut only on suitable land or to log selectively.

Differences of opinion exist on which of the suitable lands are appropriate for timber harvest. Some support harvest of trees on all suitable land, including big game winter ranges and grass-tree mosaic (GTM) areas. Others think that marginal or sensitive lands, such as riparian areas, watersheds, GTM, and meadows are not suitable for logging, but are better left for recreation and wildlife. Some indicate that inventory plots in unsuitable lands should be dropped from potential yield calculations. Others say to correct the deficiency of not recognizing timber volumes until they reach commercial size, as it understates inventories.

Strong support was given for planting and reforestation, with preferences split between ponderosa pine and a mixture of species. Some wanted reforestation required in timber sale contracts Others urged we base harvest rates on actual regeneration, in other words, we're cutting faster than we regenerate. Concern was expressed that some old clearcuts are still not restocked, and poor regeneration has occurred on steep slopes and rocky soils.

SPECIES MIX & TYPE CONVERSION

Public comment in these two topic areas fell into two distinct lines of thought: The importance and role of ponderosa pine on the Forest; and the maintenance of species diversity on the Forest.

Comments received from the State of Oregon, the timber industry, and some environmental groups and individuals clearly indicate that the question of ponderosa pine management and harvest levels is a big one. The timber industry, the state, and others wanted to maintain a level of pine harvest above that suggested in the proposed Plan; a level of 35 MMBF/year in the first decade is a popular figure. Ponderosa pine is viewed as being significant to both the primary and secondary economies of the area; there is a fear that failure to sustain the ponderosa pine harvest level would force the closure of local mills. Many suggested that pine harvest levels be "ramped down" from current levels to a sustainable level over a two-decade period in order to allow industry time to adapt Some suggested that pine volume be taken from third and fourth decades to maintain a higher level in the first and second decades

A countertrend suggested that advances in technology and new markets will allow future industry to handle whatever mix of species and sizes the Forest produces. Some stated that the production of large sized pine should not be emphasized if it would cause a decrease in the Forest's overall timber harvest potential. Many wanted cultural work to favor ponderosa pine, some stated a preference for managing ponderosa pine under an uneven-aged management strategy, with possible pruning to produce quality lumber.

The species diversity question focused on opinion about the practice of monoculture. Many felt the Forest currently is (or will under the Forest Plan) espousing the practice of monoculture and actively reduce species diversity on the Forest; they opposed this direction. Uneven-aged management was suggested as a way to maintain species diversity. Some felt that clearcutting was reducing species diversity and leading to the elimination of white fir Support was evinced for providing for the maintenance of mixed species stands, and for planting mixes that contain more than one species Some stated a preference for a reforestation mix that matches the mix existing on a site prior to timber harvest.

TIMBER STAND IMPROVEMENT

Thinning received many favorable comments as it is seen as a vehicle to accelerate the growth of better trees and, eventually, to engender healthier forests producing more, and a higher quality wood, wildlife habitat, and water yields.

The modeling of the thinning was criticized by industry (and others) as not having enough commercial thinning entries; more harvest volume (ASQ) was possible according to them Criticism by environmentalists was along the following lines: Thinning and planting may lead to monoculture; yield tables are overly optimistic and don't reflect possible losses; commercial thinnings are not marketable; and the allowable cut effect (ACE) cannot be used if funds are inadequate.

TREE IMPROVEMENT & GENETICS

Tree genetics are assumed by most of the public to provide benefits, but many have reservations about claiming increased harvest without hard proof. Past forest plantings with offsite seed sources and a narrow gene pool have failed or have "fall downs" in growth and, therefore, should warrant a decrease in the yield tables.

Concerns about genetics center around the following: Allowable cut effects (ACE) are based on unproven tree performance or are premature; ACE's are based on inadequate funding; and existing, onsite trees are already genetically adapted.

LOGGING SYSTEMS

Comments were summarized by this statement: The Forest should utilize more aerial logging, which would allow areas too sensitive for road building and conventional logging to be kept in the timber base and produce needed wood products while maintaining the natural character of the area.

UTILIZATION STANDARDS

Comments centered around broad scale attempts to increase the cut and provide firewood. However, concern was expressed about harvesting material on marginal sites that should be "just left alone." Specific comments included: The Forest should aggressively pursue markets for associated species; more salvage effort should be made for a variety of reasons; and don't let timber die and rot in the woods because it is a waste. Others wanted: Dead and down trees for nutrient cycling; to reduce prescribed burning and increase utilizations to improve air quality, to increase prices in order to encourage increased utilization, and to use the ponderosa pine and old growth and grow higher quality wood

BELOW-COST SALES

Below-cost sales do not appear to be a major issue on the Forest. However, nearly all respondents commenting on below-cost sales were adamantly opposed to the concept The main issues and concerns expressed had to do with use of taxpayers' money to "subsidize" the timber industry, building roads without perceived payoff to forest uses and resources other than timber, and risking damage to other resources.

Some suggested that the Forest explore opportunities to improve the value and salability of timber sales through improved sale design and cost reduction measures.

FIREWOOD

Response on this subject was mixed, with some people urging better control and a decrease in firewood cutting; and others strongly favoring a greater firewood supply and more vehicle access.

Suggestions were for leaving areas open longer—before and after logging; for leaving more slash and debris for firewood use (reducing utilization standards); and for reducing lodgepole pine harvest to increase its availability for firewood. Others wanted fees raised and roads closed to protect wildlife and provide better hunting and semi-primitive recreation.

RANGE

Nearly all of the many comments received on this topic concerned the level of grazing use. Over half of these, mostly advocates of the Citizens for Multiple Use Alternative, favored an increase over the current level of 54,500 AUM's; most supported the preferred alternative level of 59,500, including sufficient investment level to support planned increases and providing that overgrazing an area was not allowed. Many of these respondents suggested that the Forest focus on improved range management practices to increase efficiency and to mitigate environmental effects associated with livestock grazing. Others believe the land is already overgrazed, think the long-term grazing effects are extensive, and want the current levels reduced (the majority of these favored Citizens Alternative E with a level of 35,000 AUM's), primarily to meet wildlife needs and/or protect watersheds and riparian areas. A smaller number wanted to keep the current level; and few wanted to eliminate livestock grazing altogether from the national forest.

Concerning the use of the forage resource, half of those commenting said there was no conflict (when properly managed) between livestock and other resources, especially elk and deer. Others wanted grazing eliminated in riparian zones, in special interest areas, and municipal watersheds; and eliminated or greatly reduced or restricted in wilderness areas (and high use recreation areas), big game winter ranges, and lands in less than good condition. A few indicated that forage utilization standards need to be established, while others thought the current levels of utilization are too high.

Many respondents said the information in the planning documents was inadequate for evaluating the impacts of grazing; that the alternatives should have provided a full range of grazing levels (including zero AUM's), and the grazing system and acres (by range condition) need to be shown for every allotment. Others addressed current grazing administration and range improvements Many called for more specificity in standards and guidelines in the application of range management practices. Many others called for improved permit administration, monitoring of range conditions, and supervision of permittees. Most said not to build more fences, including riparian fences; and there was overwhelming opposition to animal damage and predator control on the Forest. Burning and seeding had general support.

Numerous comments concerned grazing fees and the economics of the livestock industry. About one-third of comments in this area opposed subsidizing of the livestock industry, or was concerned about the Forest permittees' contribution to total community stability. Many wanted grazing fees raised; various reasons were submitted including increasing private land competitiveness and reducing negative impacts. Other respondents were in favor of grazing and the support it provides to local economies and employment.

WILDLIFE

GENERAL/OVERVIEW

Many respondents have a strong interest in wildlife. The proposed Plan's treatment of wildlife concerns brought mixed reactions (both in opposition and support), and numerous specific suggestions.

A priority resource for many respondents is wildlife. Their principal emphasis is on protection of all forms of wildlife, and they are concerned about the effects of management on it Many of these respondents call for the protection of all remaining roadless areas, old growth stands, and riparian areas, in order to maintain viable wildlife populations, habitat and wildlife diversity, and old growth dependent species. They cite impacts of road building, timber harvest practices (especially clearcutting or even-aged management), and motorized recreation as being detrimental to wildlife and wildlife habitats. Some saw uneven-aged management as beneficial to wildlife. Limited access and road closures (permanent and/or seasonal) to protect wildlife from harassment, particularly during critical use periods, are recommended. Many people want "open miles" of road reduced to no more than 1.5 to 2.0 miles per square mile of habitat. They feel that the Forest emphasizes commodity resources and does not adequately recognize the (economic and other) values of wildlife, hunting, and amenity resources. Recreational activities associated with wildlife viewing and hunting are of paramount importance to many. The Forest and its diverse wildlife are highly regarded.

A plan that provides equitable use of resources while maintaining wildlife populations is important to many other people. Many of these respondents believe that timber harvest and wildlife management are compatible, particularly when habitat security is provided, and that the proposals set forth in the preferred alternative are generally acceptable. Several indicated that temporary (seasonal) road closures should be utilized to protect habitat. They feel that wilderness and other unroaded areas provide plenty of wildlife habitat. In fact, many feel that development and management enhances habitat by creating desirable forage and improved cover; habitat is improved directly through projects such as water hole construction, prescribed burning, and other measures. Some believe that better access enhances protection of habitat.

Some interest was expressed in restoring the "ecological balance" by introducing (or reintroducing or increasing) wildlife species on the Forest, namely: Wolf, grizzly bear, and cougar. Minor controversy surrounds bighorn sheep transplants on the Forest. A few individuals indicated that the Forest should address potential impacts between bighorn and domestic sheep in more detail, and also should address potential impacts to plants and areas.

OTHER WILDLIFE

Virtually all the respondents who commented in this area indicated too much emphasis was placed on big game species (deer and elk) and that more emphasis needed to be placed on protection of other wildlife species. They thought that management of nongame species (in the proposed plan) was incomplete and unsatisfactory. Related, were comments that our monitoring plan was deficient by not adequately addressing the needs of nongame wildlife.

DEAD AND DOWN TREE HABITAT (SNAGS)

Nearly half the comments on this topic proposed a higher level of dead and down tree habitat than that in the proposed Plan. Several organizations, agencies, and tribal comments indicated the level of snag management should provide habitat for at least 60 percent of the potential population levels for dependent wildlife species. A few felt snag levels should be decreased, or that less dead and down tree material should be left on the ground after harvest

A number of respondents indicated that the issue of dead and down tree habitat treated in the various planning documents was inadequate or deficient. They also suggested strengthening the snag inventory (present condition) and monitoring plan, and adding a discussion of the value of dead and down tree material (a literature search) to the Plan.

BIG GAME

Concerns for big game follow the general pattern above, but include additional specifics, such as population levels, big game on private land, competition with domestic livestock, and winter range management and potential harassment

Many respondents on the subject expressed thoughts on one or more of the following points:

Desire by most to maintain or increase deer and elk numbers. Some want reduced populations, to minimize private land and agricultural impacts

- The importance of maintaining, protecting, and/or improving the quality of big game habitats on both summer and winter ranges. Strong emphasis was on enhancement of winter ranges. Differences of opinion were apparent on how this was to be done

- A necessity for reducing the miles of open road (by closing roads), particularly on winter ranges, to reduce or minimize effects on deer and elk. Support for a more aggressive Forest road management program to enhance big game habitat values is high Reduction of open road densities to 1.5 or 2.0 miles/square mile was mentioned by various respondents Temporary closures are supported to provide habitat security and "quality" hunting opportunities.

- A wish by many to reduce (restrict) timber harvest activities and harvest levels, including road construction, to minimize perceived adverse effects on big game: A desire by many others to allow standard timber management on summer and winter ranges (maintain or increase timber harvest) because of perceived compatibility with big game management.

- The need to protect migrational corridors, fawning and calving grounds, elk wallows, and riparian areas.

The environmental community respondents expressed a need to maintain existing habitat diversity for big game. Increasing or improving forest (thermal) cover and increasing quality winter ranges and calving areas to maintain (or increase) herd sizes were also important concerns. Timber harvest and road building are perceived to severely decrease herd size. Other comments supported maintaining additional acres of grass-tree mosaic (GTM), and reducing OHV use on the Forest, particularly on winter ranges. They indicated that most, if not all, roadless areas should be retained to reduce open road densities and provide undisturbed habitat. Some felt that old growth should be retained for elk cover and additional protection should be provided in riparian areas. A closely related group felt a strong need to enhance habitat conditions and hunting opportunities in order to improve local economies. A concern was expressed about meeting projected increasing demands (for hunting) when compared against long-term projected decreases in elk populations. In their view, elk and deer hunting are an important economic benefit, undervalued by the Forest.

Some respondents felt livestock and wildlife (big game) use were incompatible, and livestock grazing should be reduced to favor wildlife. Strongest concerns dealt with winter range. Some felt the perceived poor conditions of winter ranges is attributable to livestock grazing. However, others indicated that both livestock and big game thrive on private lands that have heavy livestock use.

A number of respondents, primarily supporting commodity use positions, felt that timber harvest activity and big game populations were entirely compatible, as shown by present high population levels of elk and deer. They feel big game numbers have increased under present timber harvest practices and see no conflicts. Many questioned the biological justification for harvest restrictions (for thermal cover), since, in their view, the scientific literature indicates that big game do not need extensive amounts of thermal cover where winter ranges have adequate forage and protection from disturbance. They supported timber management in GTM, direct habitat improvement to forage quality, and temporary road closures. Employment and community economic stability were more important in their view than big game numbers, although most of these respondents would like current populations maintained.

One group of respondents felt that elk numbers should be reduced or maintained to protect adjacent private lands. They felt that Forest management activities have displaced big game on to private lands, and any population increase would aggravate the problem.

Others posed various other general and technical concerns and questions and expressed a need for additional data on: The adequacy of the habitat effectiveness model (HEI); big game population projections; winter range conditions and management; use of different road closure techniques; effects of hunting pressure, snowmobiles, and OHV's; public and private land carrying capacities; and potential forage competition. Monitoring of timber and range management effects on big game was stressed.

OLD GROWTH

Comment and opinion about old growth and its management reflected two divergent points of view. A number of respondents strongly favored retaining and protecting old growth. Many felt that more undisturbed old growth habitat should be protected than is proposed in any of the alternatives. Many of these respondents supported Citizens Alternative E, and wanted to restrict timber harvest and road building in order to retain old growth habitat. They suggested that old growth forests are unique and a rapidly disappearing ecosystem. The preferred alternative was said to be "woefully inadequate in the amount of old growth habitat retained."

These respondents felt old growth retention was needed to maintain and protect a number of values including: Continuance of wildlife habitat diversity and all forms of wildlife using old growth; increased dead and down tree habitat; maintenance of plant diversity; aesthetics; and provision for water quality and fish habitat. It was said that among the benefits of old growth and roadless area preservation are the complex ecosystem network that provides opportunities for research, retention of the model of naturally evolved forests, and stimulation of the mind and senses. Indian tribes expressed the importance of old growth for meeting the needs of "treaty hunting and fishing rights." The tribes and many others stressed that it should be "dedicated" old growth, rather than "managed." Several people indicated that old growth should include 15 percent or more of the Forest acres, and some tied old growth to retention of roadless areas. Many of the respondents expressed a strong desire to prohibit disturbance (i e , logging, roads, etc) in any existing habitat. Some say to destroy the resource is to condemn it.

A number of other respondents felt that existing old growth is important to the timber industry and local economy because of the high quality, valuable wood from old growth, and so it should be available for harvest. Many respondents in this group favored the "Citizens for Multiple Use Alternative." They suggested that the Forest set aside no more acreage than needed to reasonably assure maintenance of viable populations of "dependent" wildlife species. Temporary old growth protection was also suggested until scientific uncertainty surrounding the question of old growth habitat is reduced. These people felt there was sufficient old growth in wilderness areas, but if additional habitat were needed, it should be retained in only visual corridors, riparian areas, and some other unroaded units. Some preferred "managed" old growth because the approach was felt to better serve recreation, watersheds, timber, and other resources; they indicated that managed stands provide many of the habitat components used by "old growth dependent" species.

Some people requested a complete and field verifiable inventory of all existing and "dedicated" old growth units, with no timber harvest until the inventory is completed. Another expressed "need" was for more detailed

monitoring procedures to track the loss or change of inventoried, dedicated, and potential old growth habitat; others propose monitoring to determine the impact of timber management on "old growth dependent" wildlife. In addition, there were demands for better analysis and detailed information (maps, tables), review of the indicator species concept (invalid, inaccurate, or incompletely displayed), display of old growth by plant community and other acreage basis, and review of the old growth definition before finalizing the Plan.

(MINIMUM) MANAGEMENT REQUIREMENTS

The majority who commented on this topic expressed concern with the way our (minimum) management requirements (MR) and management indicator species (MIS) lists were developed, and with the apparent inadequacy or incompleteness of these documents. Some respondents felt the MR levels were too high, causing unnecessary lost opportunities for management; some felt them too low, causing unnecessary loss of wildlife species; and a few felt the proposed lists and levels were all right. One comment indicated the process is subject to NEPA regulations and should include public involvement.

Many persons indicated the need for more mature and old growth habitat, and more large snags. These individuals expressed the concern that with the reduction of these habitat components, the populations will be significantly reduced and that this habitat cannot be replaced.

Many of the comments indicated that pileated woodpeckers and pine marten were more adaptable than anticipated, and therefore were probably not good indicator species. Other related comments mentioned the need for inventories or population censuses to determine present conditions. A small group of respondents expressed a need to have an indicator species for the ponderosa pine community types; they suggested the white-headed woodpecker.

THREATENED AND ENDANGERED SPECIES (ANIMALS)

It was generally felt that our threatened, endangered, and sensitive animal standards and guidelines were adequate, but some wanted to make additions:

- Goal 7 is vague--define "proper."
- Exclude domestic sheep from bighorn areas.
- Do not limit goals to vertebrate animal species.
- Improve preproject inventory and monitoring.
- Write species management guides.
- Sensitive species need more attention in the Plan.
- Add the great gray owl to the Forest's sensitive list.

Some suggestions were made for promoting the recovery of listed species:

- Cooperative agreements with adjacent landowners,
- land exchanges to secure critical habitat,
- management prescriptions to enhance habitat,
- roadless areas with potential habitat should remain roadless,
- leave snags along rivers for bald eagle perches, and
- reduce timber harvest for a more balanced use of resources.

RIPARIAN

All groups agreed on the need to protect riparian areas but did not agree on how this was to be done. One predominant theme was that riparian zones constitute the most important land type in the forest and require more protection and less development than are proposed in the Plan. Under this view, a small amount of timber harvest, preferably by uneven-aged management, and light cattle grazing could be allowed, but the emphasis should be on fish and wildlife values and maintaining the integrity of the riparian areas. These respondents gave a strong message of wanting no new roads in riparian areas. Some thought present grazing strategies to be ineffective, especially for some streams presently in poor condition. Others believed better riparian area monitoring is needed to provide a baseline to show predicted riparian area recovery.

Some respondents felt the riparian protection proposed in the Plan to be a good balance, but the other principal theme was expressed by respondents supporting the Citizens for Multiple Use coalition alternative who felt less riparian protection than shown in the proposed Plan would provide adequate fish and wildlife habitat. They suggested that timber harvest be allowed in nonwilderness riparian areas (not prohibited), riparian harvest dispersion be reduced, and emphasis be placed on mitigation and direct habitat improvement and monitoring of timber harvest impacts. They also felt that mineral exploration and development could be allowed while protecting riparian values and that these areas should be kept fully accessible for mineral exploration and development.

Fencing riparian areas was a hot topic. Respondents in favor of grazing emphasized alternatives to fencing, and were opposed to riparian corridor fences. Some of those opposed to grazing, or in favor of reducing cattle numbers, were in favor of fencing to protect riparian areas.

FISH

All comments in this area were supportive of protecting fish habitat and increasing fish production. Many respondents felt that our primary duty is to manage watersheds for water quality and fish habitat, and that the proposed plan falls short of meeting our stewardship responsibilities. They felt that timber harvest with associated road building, along with livestock grazing, were detrimental to water quality and fish habitat. Several respondents felt it was more economical to protect fish habitat than to correct management problems with mitigating measures. Some felt that roadless areas should be maintained for high quality fish habitat outputs Many others suggested that quality fish habitat and increased fish production could be gained along with managing other multiple uses including timber, livestock grazing, recreation, and minerals (see discussion in the Water and Riparian sections).

The Indian tribes, with strong ties to fishing as part of their heritage and treaty rights, felt that the Forest land ethic has been wrong. They felt that the Forest has been commodity driven, and now needs to be habitat oriented. The tribes (and others) were skeptical about our Best Management Practices (BMP's) and Forest-wide Standards and Guidelines (which they mentioned say nothing about habitat quality) in protecting fish habitat. They felt the Forest should be responsible for supplying more than just enough fish habitat to meet the needs of the fish present. They questioned Forest smolt habitat capability index as a means of fish habitat management, and felt the monitoring plan was inadequate

Fish habitat enhancement was supported by nearly everyone, although differences of opinion showed in preferred methods for achieving improved habitat: Riparian recovery and enhancement versus engineered structures. Many felt that riparian management should play a larger role in fish output calculations and were uncomfortable with smolt habitat capability outputs being tied to structural habitat improvements Some felt it more economical to protect habitat than to correct management problems with mitigating measures, which were questioned for their effectiveness. Others said the Forest prefers mitigation to good land management practices. Many felt that funding is too low to compensate for losses of high quality habitat, and also the reliability of funding was questioned. A few felt that proposed enhancement was really mitigation for past and future habitat degradation from logging, grazing, and mining, and questioned the Forest enhancement project priorities because of incomplete fish and riparian inventories.

On the other hand, many others supported and emphasized properly designed projects and the use of mitigation measures and direct habitat improvements to maintain quality fish habitat. Such practices, in their view, permitted timber harvest and other management activities to occur with little effect on riparian areas or water quality.

MINERALS AND ENERGY

The mining community at large was very disturbed about the potential vehicle access restrictions to mineralized areas. Although they continue to have the right of access to new mineral discovery sites (except in wilderness and other classified areas), the primary concern was the increased cost of access. Many who commented on this subject advocated maintaining the current Forest level of mineral accessibility and specified that lands should not be withdrawn from mineral exploration and development without an amendment to the Forest Plan

A general consensus exists among those who commented on this topic against creation of any dams in the Blue Mountains because of impacts on scenery, fish runs, and white water and other semi-primitive recreation. A few individuals favored dams to provide water (during low flows) and/or feasibility studies for dams and recreation sites in Mill Creek, Tiger Canyon, and North Fork Meacham Creek. Studies in coordination with the Army Corps of Engineers were suggested for ground water recharge and recreation.

Concerning oil, gas, and coal leases, a mixed response was received representing every sort of opinion, from full development to none at all. Most comments related to roadless areas and Wild and Scenic Rivers (see discussion on these subjects).

PROTECTION

FIRE

The major input regarding fire management issues revolved around the positive and negative effects of prescribed fire, and the impacts of road access.

Although several persons expressed concerns regarding prescribed fire's effects on nutrient cycling, air pollution, and fuelwood availability, the majority recognized a need for prescribed fire. Specific beneficial aspects mentioned include insect and disease control, forage enhancement and riparian area management, and fire hazard reduction The relationships of fire to management of other resources, such as range, big game winter range, wilderness, and Research Natural Areas were generally identified as positive; while impacts on snags, rodent habitat, and air pollution were mentioned as negatives.

The pros and cons of roads and other access relating to fire prevention and suppression were numerous and conflicting. Access provides more opportunities for human-caused ignitions, while lack of access prevents the conventional rapid ground attack with engines, and vehicular transport of firefighters.

Several respondents recognized the fire risks associated with logging, slash burning, and OHV use.

INSECT AND DISEASE

The public is concerned about forest pest management on the Umatilla, although they are polarized as to what is the best approach to take. Of the comments received, there is universal support for some kind of active pest management. Of those mentioning chemicals, about equal numbers support and oppose the use of chemicals and pesticides. Use of Sevin in the control of spruce budworm was advocated by a few. Most would use chemicals only as a last resort.

Most would like pests dealt with through silvicultural practices rather than chemical control, although another polarity exists on the appropriate silvicultural methods to use. A major topic centered on the debate over even-aged versus uneven-aged management. Those supporting uneven-aged management stated that the natural diversity encountered in uneven-aged stands provided a basis for minimizing pest problems. Mixed stands were seen as being more healthy and providing more resistance to pests. Even-aged management was seen as being more vulnerable to pest and disease problems, due to a perceived lack of diversity Dwarf mistletoe and rots were not seen as a problem arising from uneven-aged scenarios. On the other side, even-aged management was seen as natural biological control of pests. Support was strong for managing for seral species, and in particular ponderosa pine, over true firs in the management of disease and insect problems. This group saw uneven-aged management as being very detrimental to effective pest control.

Another issue revolved around the need to regenerate old growth timber in order to prevent it from going to waste and to eliminate it as a source of infection in newly established stands. Old growth areas, visual zones, and wilderness were seen as being detrimental to pest management objectives. Some stated that such areas serve as sources for reinfection of stands outside their boundaries and negate pest management activities. One group stated that the Forest was not following the direction in 36 CFR 219.27 by not engaging in aggressive pest management activities in the wildernesses.

Current information in the proposed Plan was seen as inadequate. Many respondents found fault with the empirical and managed yield tables, claiming they do not reflect the impacts of forest pests on anticipated future yields. Because of this, they felt the sustainable harvest level may have been set too high. Some thought that since insect epidemics occurred after the timber inventory was conducted, the starting inventory figures

would not reflect what the Forest actually has to work with. Some suspected that the mountain pine beetle had depleted the ponderosa pine inventory and, therefore, the pine harvest levels could be too high. Most supported the need for the Plan to better address the topic of forest pest management over time.

PESTICIDE USE

Most respondents in this category wanted a complete ban on the use of all pesticides, and others wanted their use severely limited (such as only on big game winter range, and never in or near water). A few were in favor of continued use of all registered chemicals in management efforts.

It was suggested that an environmental impact statement be prepared to address the use of insecticides on the Forest, and that the Forest's monitoring program for the use of all pesticides needs to be strengthened.

SAFETY

Public safety comments were limited to three areas. Snags, crowded hunting conditions, and roadside screening.

Where snags present a hazard to loggers and others, it was suggested that rather than remove the snags and lose the habitat, less harvest activity should take place where it is hazardous.

Crowded hunting conditions and road hunting were identified as potentially dangerous activities, and the possible resolution was to provide more area for quality hunting.

The third safety issue dealt with the removal of roadside trees to provide better sight distance in order to avoid hitting wild animals coming onto the road, and to provide more direct sunlight on the road to help prevent icy conditions.

ROADS

Roads and road management were another area of strong differences of opinion and comment. One general feeling from the public was that our road system is already quite extensive ("too many roads") and typically viewed as being more than sufficient to manage the Forest. To propose an additional 1,400 to 2,000 miles generally seemed incredible to some. Roads are believed to have negative environmental impacts on the environment. Major areas of concern are: (1) The impact to water quality due to erosion, sediment, and siltation; (2) The impact to wildlife (particularly elk and deer and wildlife dependent on snags); (3) The impact that roads have upon roadless areas, particularly those with key watersheds; (4) The impact that roads have upon recreation opportunities and the perceived reduction of the trail system; (5) Impacts to the remaining old growth areas; and (6) impacts to riparian areas and fish populations. Other concerns centered on the effects to scenic qualities and aesthetics. Many comments indicated a general feeling that roads are overbuilt and that the Forest should use standards and techniques that minimize adverse environmental effects Some of the public expressed displeasure at having to "subsidize the timber industry" by paying taxes for road construction.

Another body of feeling from the public was that roads are the "life blood" of the resource base and ability to use the Forest. Roads are important to industries relying on commodities from the Forest and recreationists looking for access to recreational opportunities. Many felt that it is important to continue an active road construction and reconstruction program for all Forest users including commodity producers. Some respondents supported construction of roads specifically to provide access for fire prevention and suppression, to access some scenic areas for viewing, and to provide more access for recreational activities.

Many of the public supports more road closures (but wants better information on what is closed and when), primarily to reduce impacts on elk and deer. Other supporting reasons included soil and stream protection, mitigation of roadless area impacts, lowered maintenance costs, and enhancement of hunting and other dispersed recreation activities Temporary or seasonal closures were supported by many, and permanent or yearlong closures were favored by a large number of other respondents. Some recommendations for specific road closures were made, particularly for roads which cut into wilderness boundaries or divide wilderness areas into small sections

Some opposed road closures for a number of reasons: Access to public lands should be available to the public; closures are ineffective and unenforceable; the Forest Service violates closures; and closures are costly.

LAND STATUS AND LAND USES

LAND STATUS

Private landowners along the Grande Ronde and North Fork John Day rivers are concerned about the impacts that Wild and Scenic River designation might have on them. Other adjacent landowners are concerned about elk on their land, and the impacts of the Forest big game management programs. Some indicated a need for better cooperation (and understanding) between the Forest Service and landowners on boundary fencing policy.

Some people have strong feelings for eliminating livestock grazing and purchasing private land inholdings that are critical big game wintering grounds Others want private land purchased in the vicinity of roadless areas in order to eliminate road access. Some persons oppose a proposed land exchange with the city of Walla Walla for the purpose of developing a reservoir near the Mill Creek watershed.

LAND USES

There was much sentiment to cease or strongly control commercial mushroom harvesting on the Forest, and also to study its effects on the environment. Other concerns involved commercial outfitter parties—limiting their number of stock, and prescribing how and when wilderness area values will be protected from overuse and degradation caused by them. Recreation residence owners requested better access-road repair by the Forest Service. It was also mentioned that Spout Springs Resort should not be expanded into the Lookingglass area because of impacts on the anadromous fishery and on scenic views from surrounding roads.

The only comment on utility corridors was a request that we mention in the Plan that all natural gas and hazardous liquid pipelines, other than rural gathering lines, must comply with the safety regulations in the Code of Federal Regulations.

RECREATION

OVERVIEW

Respondents verified and emphasized that recreation is a popular and widely supported use of the Umatilla National Forest. Most of the specific forest recreation comments concerned trails, visual appearance, roadless opportunities, and off-highway vehicle (OHV) use. Others addressed "special places", developed sites, road (access) management, and rivers.

Although many people wanted recreation emphasized over timber harvest, many others recommended multiple-use management (commodity production along with recreation), and a few wanted commodities emphasized over recreation and other amenities. One preference was voiced to the effect that multiple-use management is acceptable provided: 1) timber harvest intensities are reduced to provide an acceptable visual appearance; 2) road standards are kept to a minimum; and 3) seasonal road closures are administered to reduce effects on resources, especially big game for hunting. However, there is also a strong sentiment that an increasing social need for stress relief exists which only a primitive or semi-primitive setting can provide.

A strong feeling was expressed that the selected Forest Plan should place more emphasis on recreation. Although many people had strong feelings about specific types of recreation activities, they expressed a cumulative need for recreational opportunities that benefit a wide spectrum of forest users. Some of the common recommendations were: Place more emphasis on winter sports and multi-recreational activities; existing trails and campgrounds should be better maintained; more trails need to be constructed within and outside of wildernesses; improve existing campgrounds and provide more developed campgrounds; provide more designated and groomed snowmobile routes, parking areas, and play areas; provide for potential ski area expansion; and provide better communication to the public through better signing, brochures,

handouts, and interpretive signing In addition to traditional recreation uses, opportunities for new, less common uses (e.g., mountain bike riding, ATV's, wildlife viewing, and so forth) were desired.

The economic benefits of recreation were included in many comments. Many thought the Forest Service did not recognize, or undervalued, the direct and indirect values to the local economies

TRAILS

A need for increased emphasis on trails was expressed often, both for taking care of the ones we have and for providing additional ones A prevalent view was that the Forest should construct more trails (200-300 miles) to meet projected demand for Forest recreation use, to disperse that use, and to provide loops. Also, it was felt that special effort should be placed on locating new trails in natural appearing environments (especially for motorized use). Additional trails were identified as a need by all major users – horseback riders, hikers, backpackers, OHV users, snowmobilers, and cross country skiers. In addition to those designed for traditional hiker and horse use, it was noted that trails were needed to provide for specialized activities like mountain bikes and ATV's. Interpretive trails would be enjoyed. Maintenance improvements were identified as a key need in bringing about an adequate trail system.

There were strong feelings that too many trails are being lost through timber sales. Many thought that logging and road construction should be reduced in order to better maintain and develop the Forest trail system. They also thought the Forest Service is proposing to build too many roads in comparison with proposed construction and/or reduction of trail mileage. One unique proposal was to manage trails on a "nondeclining" basis, just as timber is Many comments expressed essentially the same desire. However, many others suggested that trails and timber management are not incompatible They support high levels of funding for trail construction and maintenance both inside and outside wilderness. Other measures were proposed to the effects of maintaining trails while reducing timber intensities, providing longer timber rotations or selection harvest, and closing roads.

Concern was expressed that the proposed Plan did not clearly state the Forest intent to minimize conflicts between users Some felt that the criteria for designating OHV trails was not clear and that the Forest needed to clarify which OHV, just some or all types (snowmobile, motorcycle, or 4x4), use was entailed

Some interest and support was expressed in the Blue Mountain and New Oregon Recreation Trail proposals, indicating a need to be more specific about these proposals in the Forest Plan A number of specific trails and areas needing trails was of interest to respondents

A small number of respondents did not want the Forest to develop its trail system beyond what already exists.

OFF-HIGHWAY VEHICLES

Use of off-highway vehicles (or off-road vehicles) received many comments Potential for conflict is apparent because strong opinions were voiced on both sides of the issue.

OHV and snowmobile use have proponents and opponents Many strongly supported OHV use on all areas of public land except for wilderness areas. Many respondents indicated a need for more off-highway motorized recreation opportunities, including loop trail systems, challenging courses, trailhead facilities, and quality designated areas They wanted the final Plan to provide more opportunities to meet their needs.

Some respondents opposed OHV's on trails or in roadless areas, and a few opposed OHV's in general. Others proposed restricting OHV's to certain designated areas. Some felt that a system of primitive roads and jeep trails should be managed especially for OHV and 4WD use. A variety of reasons was presented for restricting (or eliminating) OHV use, including conflicts with other users that diminish the other users' experiences, disturbance to wildlife, and adverse impacts to trails, soils, and vegetation

There were several comments and questions about specific aspects of OHV management Several suggested that the Forest separate snowmobile and OHV use discussions in the Plan The use of two classes of vehicles – over-snow vehicles (OSV) and off-highway vehicles (OHV) – was also suggested A request was made to allow snowmobiles in big game winter range when snow depth exceeds 18" and the elk move out. Open corridors between snowmobile areas were requested. A point was made that Alternative F provides a good mix of roadless area proposals, but does not specify which ones would be open for snowmobile use. Several asked whether A8, A10, D2, and F3 areas were open to snowmobile use, and if the PAOT limitation in A2 for OHV's also applied to snowmobile use. There was some preference to establish OHV routes in the

Scenic Areas. One respondent pointed out an apparent discrepancy in that Alternative D emphasized elk with low road density but also allowed the third highest amount of OHV use. A strong desire exists to retain OHV use in the Walla Walla River watershed

A management strategy was envisioned and proposed that provides quality OHV recreation in key areas while also providing moderate levels of scheduled timber harvest.

ROAD (ACCESS) MANAGEMENT (Also see the subject section Roads for related discussion.)

Road (or access) management was a basis for a wide range of opinions about how roads affected recreation opportunities. Responses varied from a strong opinion that more people would enjoy the land if it were all roaded, to a commonly held belief that the Umatilla does not need more roads for recreation.

Proponents for roads pointed to a need for auto access to expand roaded recreation, and indicated that many people can't get around except by auto (e g , the elderly and disabled). They argued that the Forest should anticipate an increasing demand for easily accessible recreation opportunities because of the "graying of America" over the next several decades. Many people just wanted to be able to get to their destinations as quickly as possible. A significant number of respondents wanted more roads open to motorized travel so they could enjoy the scenic areas without a great deal of hiking. Several respondents were concerned that closed roads, roadless areas, and wilderness are only for the "privileged few" who can afford horses or are physically able to enjoy the outdoors, while the elderly and disabled are prevented from enjoying the Forest.

Many other respondents felt there are already too many roads, and called for no additional road development because of perceived adverse impacts to other resources and to the environment. There was also a considerable amount of concern that roads are built primarily to serve logging needs rather than recreation.

Roads closed to motor vehicles were a point of disagreement between users Many people who wanted to see roads in all parts of the Forest, also wanted to see them open to vehicle travel. Special concern was expressed by senior citizens for firewood and hunting access. Some people felt that the proposed road density would not be adequate for recreation needs; and some other comments were for leaving all areas of timber harvest activities open for public recreation use. Others claimed that fewer open roads would increase concentrations of users, thus reducing hunting quality in the roaded areas.

A strong feeling was that more (existing) roads should be closed to enhance the hunting experience, to reduce harassment to wildlife, and for other reasons (see Roads). Responses ranged from "close Forest completely except to pack-in/pack-out" to "road closures during hunting season are acceptable." Many felt that hunting and fishing are primary recreation experiences on the Forest and provide a substantial source of revenue to local communities; more closed roads would improve hunting and fishing.

ROADLESS RESOURCE (Also see the subject section Roadless Areas for additional summarized discussion.)

The issue of roadless areas was a basis for open and strong differences of opinion. Among the comments dealing with the recreation aspect, there seemed to be about equal desire for and against retaining roadless areas.

Many respondents were in favor of retaining existing roadless areas from a recreation standpoint (as well as for other considerations). A number of reasons were given including: 1) More primitive and semi-primitive recreation opportunities and areas should be provided to help meet increasing demand for these opportunities (reducing roadless opportunities would diminish these activities); 2) amenity values from roadless areas have economic values that are undervalued in the Forest Plan; and 3) roadless areas support hunting and fishing activities (and provide quality habitat) that would be significantly reduced if they were developed. Along with additional unroaded opportunities, many supported more nonmotorized trails, but they opposed campsite development inside roadless areas. There were several statements to the effect of. "No more wilderness as long as roadless areas are retained." A few wanted roadless areas to surround wildernesses as transition areas. Several pointed out that roadless recreation is only available on public lands.

On the other hand, many people felt that the entire Forest, including roadless areas (especially areas released by the 1984 Oregon Wilderness Bill) should be managed for roaded recreation and other multiple uses, including timber, range, and minerals They believed the Forest to be a resource belonging to all, and as such, should be managed to maximize benefits to all The "best" way, they felt, was to develop the Forest with roads, and leave (some of) them open for all uses (hunting, fishing, driving, sightseeing, snowmobiling, and OHV use) In their view, opportunities for dispersed recreation could be provided in areas managed for timber

production, as well as in areas not suited for timber management, by employing mitigating measures where needed. A major concern was that little recreation use occurs in roadless areas; roadless areas appear to be concentrated in GTM areas, which could best be used for other purposes.

RIVER MANAGEMENT

Rivers and water-related recreation activities are important on the Forest, a fact reflected by many comments. The issue of Wild and Scenic River classification received many comments (see the subject section on Wild and Scenic Rivers). Many people wanted all eligible rivers classified as "Wild and Scenic", in part, for their scenic and recreational values. Frequently mentioned areas were the Grande Ronde, North Fork John Day, Tucannon, and Wenaha rivers Many others preferred administration emphasizing scenic qualities with no formal classification.

Rafting, kayaking, canoeing, fishing, and swimming were some activities specifically mentioned as being important. Many indicated needs for more recreation development near water-related sites, such as campgrounds, trails, and parking areas (Some increase in user fees for these facilities would be acceptable.) Many were opposed to any dam construction on the Grande Ronde. Several comments opposed any alternative allowing increase of sediment into rivers or streams (or lakes). There was some desire for impoundments in headwaters for erosion control, water quality, and increased seasonal flows for agricultural use.

VISUAL RESOURCES

Visual appearance was a major concern for people interested in the recreation opportunities on the Forest. It was also a source of disagreement with other respondents who favored maintaining or increasing commodity outputs.

Many wanted the Forest to retain its characteristic natural appearance and aesthetic qualities, and were worried that they would be lost. They suggested that the visual and aesthetic qualities could be retained by minimizing timber harvest activities or by conducting timber harvest in a way that would be essentially unnoticeable. They were especially critical of the amount of clearcutting proposed, and quite a few people thought that "the impact of road building has resulted in visual eyesores." While some felt that clearcut harvesting is all right as long as visual values are maintained, others were concerned that clearcuts and partial cutting, especially in the foreground and middle ground, are not a sufficient commitment to landscape sensitivity. Several people suggested a preferred harvesting method to better manage visual activities, e.g., short-term selective cutting of ponderosa pine for first stand entries, and extended rotations and selective harvest prescriptions. Many people thought that roadless areas, roadsides, and prominent vistas should be managed especially to retain or enhance their visual qualities.

Many others were concerned about significant (or potential) impacts to timber production. They suggested less emphasis on visual quality management by restricting management only in the most critical viewing areas (those frequently seen by recreationists) and reducing constraints on less frequently seen areas; they emphasized applying more selective harvest practices to reduce impacts to visual qualities. Others commented that there are too many proposed visual areas, thereby impacting the managed timber base. Some believed that the old growth, roadless areas, wilderness, and visual corridors will become origin areas of insect infestations, resulting in a dying, denuded, and unsightly forest.

SPECIAL PLACES

It was apparent that many respondents felt there were "special places" on the Forest. Many of the special places mentioned were roadless areas which respondents wished would remain unroaded. Others mentioned special places accessible by road. Some indicated a need for better facilities at sites in which they were interested. The common message seemed to be that users wished these special places remain unchanged. Several people wanted more or better trails in their special places.

SPECIAL INTEREST AREAS (BOTANICAL AREAS)

Nearly all respondents who commented on the subject of SIA's favored or supported this type of area. The four botanical areas proposed in the Plan were supported without exception. Support was also evident for other botanical areas, should they be found, but none were identified by respondents. The preservation of sensitive or unique species of plants was the primary reason given for this support.

ARCHEOLOGY—HISTORY—CULTURAL RESOURCES

Few comments were made about cultural resource management. One respondent was concerned about the cumulative effects on archeological sites from management activities. An Indian tribal council comment stated that cultural resource protection, enhancement, and management should continue to be coordinated with the tribes.

WILD AND SCENIC RIVERS

The Oregon Omnibus Wild and Scenic Rivers Act of 1988, designated the Grande Ronde, Wenaha and North Fork John Day as Wild and Scenic Rivers on the Forest. Therefore, some of the comments and concerns expressed on this subject may be moot. However, a summary is included because the contending views are instinctive; they show the values and perspective of the different groups and interest on river designation and management, and are items that the Forest should consider in both the Forest Plan and river management plans.

Two major "campaigns" were conducted to generate comments on the draft Forest Plan: One was in support of recommending the four rivers identified in the proposed Plan (Grande Ronde, North Fork John Day, Tucannon, and Wenaha) as "eligible rivers" for Wild and Scenic River classification; and the other opposed recommending any river section on the Forest for wild and scenic classification. Reasons presented to support or oppose river recommendations were, for the most part, generic in nature, with no specific examples or areas identified.

Many of the organizations and individuals who commented specifically on Wild and Scenic Rivers support the classification of all segments of the eligible rivers. Each of these rivers received strong support, from the Grande Ronde with the most, to the Wenaha with the least. The reasons presented to support river corridor classification included: Protection of plant species and anadromous and resident fisheries; protection of water quantity and quality, scenic and recreational values, and providing hiking and boating areas. There was also expressed desire to protect the river areas for future generations and from dams and logging practice.

Opposition to Wild and Scenic River classification was also large and was associated primarily with the Grande Ronde and the North Fork John Day rivers (both recommended in the proposed Forest Plan). The largest segment of opposition referred to no particular river, but simply recommended that no additions be made to the Wild and Scenic Rivers system. Reasons presented to oppose classification included: Wild and Scenic River could adversely affect mining; could possibly affect irrigation water because of minimum stream flow requirements; and would interfere with, or adversely affect, the rights of private landowners on private land adjoining the river.

The State of Oregon recommended managing the four eligible rivers to protect their eligibility for wild and scenic designation until Congress acts. The State of Washington identified the Tucannon and Touchet rivers as currently under review and consideration for inclusion within the Washington State Scenic River System, and recommended these two rivers be afforded special consideration so as not to preclude their inclusion as state scenic rivers.

In addition, the following rivers and creeks received mention for Wild and Scenic River consideration: Wenaha, North and South Forks; Umatilla, North and South Forks; Meacham; Walla Walla, Upper South Fork; and Wenatchee.

Another group of comments referring to recommendations for the final Plan rather than to river classification.

- With respect to the eligible rivers, the final plan should identify:
- Which resources meet the "outstandingly remarkable" values standard.

– The need to protect the river corridors until the status of these areas has been settled.
– The justification for disqualifying any of the eligible rivers in the preferred alternative.

WILDERNESS

The appropriate amount of wilderness was the principal focus of much of the comment on the wilderness topic. Many comments indicated that additional areas should be added to the National Wilderness Preservation System. Comments ranged from including buffers or special management constraints to the perimeter of existing wilderness, to incorporating all eligible areas into the wilderness system (totaling as many as 704,000 acres). The wilderness comments were often closely related to the roadless question—many wanted areas to remain undeveloped to keep options open for wilderness classification, particularly those adjacent to existing wilderness. Some people wanted to keep the following roadless areas open for future wilderness consideration: Walla Walla River, Texas Butte, Grande Ronde, Wenatchee, Meadow Creek, Willow Springs, South Fork-Tower, Upper Tucannon, and Hellhole.

A considerably larger number of comments indicated that either an appropriate amount of wilderness was already designated, and/or too much wilderness exists and the amount should somehow be reduced.

Some comment was received on wilderness management approaches, and a few received on specific implementation of management actions Many who commented favored the concept that the Forest should manage wilderness more intensively than shown in the draft Plan to maximize the areas recreation capacity; some favored more and better trailhead facilities, better trail maintenance, and more provision for public use. Others felt that wilderness management should focus on more primitive settings with fewer facilities, narrower trails, and evidence of use cleaned up and removed. Some concern was expressed about wilderness party size (people/animals) with suggestions to reduce the number of people/animals per party to a maximum of 12, and to develop careful regulation and monitoring of commercial outfitters and guides in the wilderness areas.

A few people wanted preexisting nonconforming uses (such as mining and grazing) eliminated, while at least one wanted a nonconforming use, in this case snowmobiling, allowed. Grazing in wilderness seems to be a special concern, with some feeling it should be disallowed, or at least reduced. Some comments reaffirmed that any vegetative enhancements in wilderness should be native to the area, and no introduction of non-native fish into lakes and streams in wilderness should be permitted. A couple of organizations' comments made the point of prohibiting OHV use on all trails leading into wilderness areas, and allowing no military training groups into wilderness areas.

ROADLESS AREAS

OVERVIEW

A variety of individuals, groups, and organizations indicated they preferred to see roadless areas kept roadless (maintained in an unroaded or undeveloped state) and protected from disturbance or development. On the other hand, strong interest was expressed by individuals, groups, and organizations who preferred to see roadless areas developed and utilized for a number of multiple-use values including timber production, range use (livestock grazing), mineral production, roaded recreation experiences, and OHV use.

Generally, support for maintaining roadless areas came from environmental or preservation-oriented individuals, groups, and organizations. A common reason given for keeping the areas roadless was to protect and preserve the intrinsic natural values of the Forest. The strongest reasons expressed for roadless area retention were to provide backcountry type recreation experiences (semi-primitive non-motorized recreation opportunities), to protect and provide quality wildlife habitat (including big game, fisheries, and other wildlife), to maintain high water quality and quantity, and to maintain undisturbed riparian areas. Other reasons included maintaining fisheries, providing for hunting, maintaining and increasing trails, and maintaining old growth, providing for biological diversity, and maintaining natural beauty. Large tracts of undisturbed lands were perceived to be important in providing these resources or values. Others indicated that maintaining future options or retaining roadless areas for future generations and long-term benefits was important. These people oppose development, as seen in timber harvest or production (logging), road building, and, in some cases, grazing. Others oppose OHV use in roadless areas. Most of the expressed concern was about the perceived effects of development on the variety of resources or values of interest. Others felt roadless areas

were valuable buffer zones and viewsheds for surrounding wilderness, campgrounds, and travelways. The Upper Tucannon, South-Fork Tower, and Meadow Creek areas were said to be especially appropriate as additions to adjacent wildernesses A few others indicated that economic benefits derived from retaining roadless areas (undervalued recreation and others) had not been adequately addressed in the Forest Plan. The proposed Plan for the Forest roadless areas is not acceptable to many of these members of the public. They feel the proposed Plan does not offer substantial resolution of the issue of conserving roadless areas and they doubt that the Plan protects the roadless areas that have strong public interest.

Much of the response supporting development of roadless areas came on the Citizens for Multiple Use questionnaire sponsored by the timber, ranching, and minerals industries, related organizations and unions, and (some) individuals. Essentially, they and others indicated that the roadless areas were released for multiple-use management in the 1984 Wilderness Act, and should be made available for a broad range of uses, not reserved for "semi-primitive" roadless recreation. Development was seen as contributing to: harvest of older trees and ponderosa pine; salvage of insect disease and fire killed trees; the potential to increase productivity of the Forest and to reduce insect and disease problems; increased fire protection; the potential to lessen impacts on other parts of the Forest (disperse the effects of harvest due to larger land base); and providing for or improving big game forage and habitat (including road closures). These interests also supported roading of roadless areas to provide access for recreation activities including hunting, fishing, camping, and OHV use. Unavailability (inaccessibility) of, and use by, people who don't currently use roadless areas (handicapped, older citizens, road-oriented recreationists) is strongly felt by a large number of individuals. Many indicated that the Forest currently has sufficient wilderness acreage to meet recreation needs and too much roadless area. They opposed the concept of wilderness buffer areas. They feel that a larger share and broader range of the public would use the roadless areas if they were developed, and use would not be limited to just "special interests" (hikers, horse-oriented people, etc.). The perceived positive contribution of developed roadless areas to the local economy, jobs, personal income, reduced taxes, and increased revenues was important to many respondents

Few comments were received concerning rehabilitation of roaded areas. Some indicated that roadless areas should be maintained or expanded by adding "buffer zones" around them in which roads would be closed, returned to a "natural" state, and revegetated. Others just wanted roads reduced or no additional construction around the roadless areas. A few others indicated that if roads were built in roadless areas, they should be closed and rehabilitated.

SPECIFIC ROADLESS AREAS

Comments received on specific roadless areas were generally from environmental and related interests These respondents were overwhelmingly in favor of retaining the areas in a roadless, "minimally-managed" condition. Many others wanted all or most of the roadless areas developed, but generally did not address specific areas. Areas most commented on were· Mill Creek Watershed, Walla Walla River, Upper Tucannon, Texas Butte, Wenatchee Creek, Lookingglass, South Fork-Tower, Jumpoff Joe, and Skookum, in that order.

As noted in the water section, Mill Creek roadless area (watershed) received overwhelming support for maximum protection from development, with water quality and quantity protection the primary reasons. Also as noted previously, strong disagreement appears about management of the Walla Walla River roadless area Many thought that the roadless area provided valuable water for local agriculture and was among the best hunting and fishing grounds in northeast Oregon, and a "pristine recreational area of tremendous visual quality." They wanted no development. Others preferred the level of development shown in the draft Final Plan. One suggestion was that the Forest develop an overall watershed management strategy and incorporate it into management area direction for the Plan.

The Upper Tucannon area held public interest, mostly because, as one respondent put it, "the recreational value of this roadless area exceeds any other." It's a very popular area, easily walked into, and useable for families with children and for older citizens or others unable to tackle steep terrain but wishing to enjoy a "wilderness" experience Others indicated that the area is diverse enough to provide challenge for the experienced hunter, fisherman, or backpacker. Logging the area was questioned for reasons of steepness, riparian and fish hatchery sensitivity, low volume and economic value of timber, high costs, and difficult access.

Other areas mentioned for their gentle terrain included Jaussaud Corral. Jaussaud, as one respondent put it, is "one of the few areas left not standing on end." Hellhole roadless area also received some comment. Some suggested additions to the roadless areas. Others opposed the GTM concept and its applications to Hellhole (and other roadless areas).

The areas contained within the Heppner Ranger District—Texas Butte, Skookum, and Potamus—were said to be important oases in an intensively managed district. Because of heavy logging pressure on adjacent lands, remaining roadless areas were expressed as being vitally needed to meet the area's recreation demands and to provide wildlife habitat. The few trails in the Texas Butte were noted as essentially the only ones on the Heppner District.

Greenhorn Mountain, Grande Ronde, and W-T Three roadless areas were generally supported by a spectrum of interest to remain roadless as they merited protection for their outstanding diversity, scenic qualities, and uniqueness. A few people expressed an interest in having the Greenhorn's roads reopened and mining activity permitted. However, the majority of respondents found the area especially worthy of exclusion from any development. It was said to be an outstanding botanical resource, and to offer the only true alpine experience on the Forest. The Grande Ronde roadless area brought similar praise for its dramatic scenery and wildlife habitat, making it one of the Umatilla's "most beautiful, impressive contributions to semi-primitive, nonmotorized recreation." Some suggested that only the Grande Ronde River corridor and area seen from the river need to be protected; timber harvest was proposed on the upper slopes.

Aside from the 22 listed roadless areas, 12 other areas were recommended for roadless recreation, wildlife habitat, and watershed protection. Generating the most comments were Hells Half Acre, Bald Mountain-Cutsforth Park Recreation Area, and Bologna Basin—all in the Heppner district. Also mentioned were Five Points Creek Canyon; Eagle, Ruby, and Battle creeks; portions of McKay, Snipe, Camas, and Lower Desolation creeks; the area between the North Fork Umatilla Wilderness and Duncan Road, and several spots were proposed for inclusion in the Hellhole roadless area.

INDIAN TREATY RIGHTS

Most comments came from tribal councils and related organizations. Comments were largely directed at establishing the relationship between Forest management and Indian treaty rights, and maintaining, protecting, and enhancing these rights.

The respondents emphasized the responsibility of the Forest Service to protect treaty rights. The tribes were concerned about forest management practices and how they would affect the resources that the tribes rely upon. This included cultural resources, and hunting, fishing, and other activities such as root and berry gathering. Several comments also emphasized that the Forest Service cannot fulfill its treaty obligations by trying to "balance" or "accommodate" competing interests such as timber harvest and treaty rights, and that the Forest Service should place treaty rights ahead of other local interests. Comments from the Confederated Tribes of the Umatilla Indian Reservation pointed out a need to coordinate many of these concerns between the three forests in northeastern Oregon.

Emphasis was also placed upon the importance of inventorying and protecting archeological sites, and closely coordinating with the tribes on these matters. The tribes wanted the Forest to spell out more clearly how the Forest is planning to treat cultural resources and archeological sites.

Comments on hunting and fishing rights stressed the vested interest that the tribes have in fish, wildlife, water, and related resources. "Federal agencies must protect tribal treaty rights to support tribal hunting and fishing rights to maintain the livelihood of tribe members." The tribes expressed concerns about timber, road, and livestock grazing activities as they affect watersheds, riparian areas, and fisheries habitat.

The rights of the tribes was stressed with respect to access and protection of religious sites on national forest land, and the responsibility of the Forest to ensure those rights. The tribes indicated that the plan did not identify sites where these practices occur, provide for protecting such sites (in Forest direction), or show how the Forest mitigates management activities which interfere or impair religious activities. Comments on roots and berries were similar in theme to those expressed on religious rights Some interest was expressed to have the Forest address treaty grazing rights in the Plan

The importance of a high degree of coordination between the Forest and tribes in all management activities was expressed. Emphasis was placed on cultural resources, fish and wildlife, and travel management.

ECONOMIC AND SOCIAL CONSIDERATIONS

OVERVIEW

There is general recognition and agreement that the Umatilla National Forest is a tremendous natural and public asset that should be managed for the use and benefit of the general public (for the most good and most people). Economic, social, and environmental stability appear to be the general public goals identified by respondents. Overall disagreement is apparent on how to achieve these goals; disagreements due to different values deal primarily with management emphasis, and what the effects of Forest management ought to be. Concerns about equity, fairness, and public rights were inherent in the frame of the social considerations, and were expressed directly by some. As noted by several respondents, "everyone benefits by a well-rounded or balanced management program." However, the various interests don't agree on what the management program should be. Each proponent or interest appeared to feel that they were the majority, and others represented only a few or were "special interests." They felt that meeting their proponent group needs and interests would provide for wider use and benefit more people.

State, counties, organizations, timber industries, and individuals favored development of the Forest to provide sufficient (or high) commodity outputs (timber, livestock grazing, mining, and water) in order to maintain or improve economic and social stability while providing for environmental protection. Effects of forest management on economic continuity was a strongly felt concern. Impacts on jobs, personal income, "comfortable living," county revenues, school financing, taxes, community stability, and social health were all mentioned as being important. Shortage of commodities, particularly timber, would adversely affect each of these factors. Many respondents indicated that the health of the timber and ranching industry was important to maintaining their livelihoods and ways of life; these people didn't want drastic changes in their lifestyles. An equally important public expression was the availability of more recreation opportunities (including OHV use), high public access to the Forest, and use and enjoyment of the Forest by a larger segment of the public. A strongly held sentiment was that the commodity emphasis or utilization of renewable resources (primarily timber) benefits the greatest number of people and communities, leading to wider public use of the Forest and more public needs being met. For many, human needs were served best by management of commodity values, which were perceived as being more important than roadless areas, wilderness "lockups," and many amenity values.

The many people that supported maintaining or increasing the allowable cut wanted the economic contributions currently made by the Forests timber harvest to continue. They noted that some local communities are dominated by their dependence on local sawmills. Several suggestions for increasing the ASQ were made including: Providing an ASQ of 171 MMBF/year; keeping ponderosa pine at current levels (35 MMBF/year); increasing price trends; reducing timber sale costs to increase mixed conifer salability; including commercial thinnings; and maintaining priced outputs for community revenues. Many argued that a healthy supply of logs (especially ponderosa pine) would help diversify the economy through secondary manufacture, and would maintain long-term survival of mills (allowing "retooling" of mills) as well as maintaining jobs, personal income, and county revenues while reducing taxes. These respondents indicated that by meeting the above suggestions, long-term benefits would be gained.

Other individuals, groups, and organizations felt equally as strongly that Forest management must promote judicious use of resources; and amenity and environmental values such as recreational opportunities of all types (including primitive experiences), wildlife and fish resources, water quality, water flows, watersheds, old growth, flora, wild places, biological diversity, and areas of inherent beauty. These forest values were important to many respondents for their ability to refresh and enhance the human spirit. They were also felt to be: Invaluable to quality of life; important to maintaining ecosystems; enhancing community stability; promoters of economic diversification and long-term benefits, and to provide for the welfare of future generations. The general comment is that amenity values are inherently more valuable and higher priority than commodities (particularly timber); serve or are used by more people; and have longer term economic and political significance. They argue that without emphasis on these values, the social and economic fabric of communities would be impaired and damage would be severe. The respondents felt that maximum benefits would accrue to users of amenity values, and other segments of society, in both the short and long run.

Environmental groups and individuals (and others) were concerned about economic stability and emphasized the necessity of considering development of recreation opportunities (hunting, tourism, and others). They were also concerned about water yields from sustainable forests (reduced ASQ), and soil stability (long-term productivity). Feeling that if these were protected and maintained, they would provide

economic diversity and increase the local economic base. Many questioned aspects of the timber program and suggested that:

- In lieu payments are unfair subsidies to locals.
- Payments to counties are overestimated
- Jobs are an invalid measure because they are affected more often by modernizing of mills than by the harvest level; the Forest may be subsidizing jobs through below-cost sales (and clearcutting).
- Some sales and volume are never sold, so the increase in ASQ is questioned.
- Market price goods are overestimated and improperly computed, and nonpriced benefits are undervalued (making economic comparisons less equitable).
- Charge user fees to reflect "true" value of uses and dilute dependence on timber for revenue.

Others questioned technical aspects including costs and benefits of practices, potential funding problems with intensive timber management, and the economics of livestock grazing.

BUDGETS

Several concerns were expressed about the Forest Plan budget, including the following:

- Many respondents in this category were concerned that the funding required to implement the Plan would not be forthcoming, and recommended that the Plan describe how programs would be affected by budget shortfalls.

- A variety of comments focused on funding levels and use, such as roads and grazing perceived as subsidy funding, or practices (mitigation) not effective due to limited funding

- Others were concerned about equitable distribution of funds between programs at both full funding and reduced budget levels (they felt that timber and roads should not be overemphasized).

COMMUNITY STABILITY/OTHER SOCIAL CONCERNS

Strong concerns about community stability were expressed by a variety of respondents including the states, Indian tribes, and other groups, associations, and individuals. The comments fall into three general areas: (1) Statutory authority and the role of the Forest Service; (2) philosophy of management to achieve community stability; and (3) the need for additional or new information.

Some argue that the maintenance of community stability is an important obligation of the Forest, as directed in, or interpreted by, in laws and regulations (Organic Act, Multiple-Use Act, and NFMA, 36 CFR 221). These respondents want the Forest to provide sufficient commodity outputs (timber, grazing, minerals) to maintain viable local economies and communities. Others (particularly Indian tribes) indicate that there is a "dearth of statutory authority" requiring community stability, and the Forest Service is not charged with obligations to insure community stability. They feel that the Forest Service acts as if the maintenance of community stability is a primary constraint on Forest management. As a result, they contend, perpetuation or increases of commodity outputs occurs at the expense of noncommodity values. They also think that attempts are being made to maintain lifestyles that are not otherwise economically feasible.

Many advocates of the Citizens for Multiple-Use Alternative indicate that maintaining timber harvest levels (sufficient timber supply), sustained timber yields, adequate ponderosa pine harvest levels, water flows for towns, and livestock grazing are important for stable local economies, local employment, stable families, and revenues for counties, cities, and schools Concerns (fears) were expressed about the potential negative impacts of insufficient supply of commodities causing reduced production, mill closures, unemployment, and other significant adverse impacts on communities. Environmentalists and others (advocates of Citizens Alternative E) contend that long-term interests are best served by amenity values. In their view, a sustainable forest supplies more jobs; provides quality water to communities, maintains towns and cities dependent on tourists, fishermen, hunters, and other recreationists; maintains big game and other wildlife which influences tourism; and helps to diversify the local economy. Others contend that tourism and timber management are fully compatible. Several respondents wrote that if reductions in timber supply were made, they should be made gradually Both states have concerns about economic and community stability, balanced with preservation of environmental and quality of life values.

A body of respondents indicated that the plan did not adequately address or present impacts on individual (specific) counties and communities. They thought the Forest should provide supplemental information on specific impacts to help in the DEIS evaluations, and to allow a better look at economic development potentials. A few respondents also said that the Forest should consider how negative economic impacts might be mitigated.

Another area of concern was about the consequences of forest management on lifestyles of individuals, groups, and communities. These concerns relate to economic relationships (jobs, income, and other), recreation opportunities and aesthetics, and requirements of Native Americans. Use of the Forest and its resources to maintain or protect the health of the timber industry and the ranching community is important to many respondents. These people want to maintain their livelihoods and ways of life; they don't want drastic changes in their lifestyles. They are concerned about "large and lasting impacts on people" if their lifestyle is changed.

Others recognize that the Umatilla is a major provider of recreation or leisure time opportunities for residents and visitors, and that the Forest represents a place to escape from the daily grinds, refresh the human spirit, and "regroup or think things over." People want (or don't want to lose) the opportunity to camp, fish, hunt, snowmobile, and enjoy the mountains alone or with family and friends. Differences between groups and individuals appear in their perceptions of how to manage the Forest and the types of experiences that the Forest should provide. Some see a strong need to protect the environment and its various components to "continue to have a decent lifestyle." Others see a compatibility between using Forest resources and meeting their lifestyle needs.

Native American tribes are interested in continuation (and possibly showing) of their culture and traditional way of life. They are concerned about addressing the interests of tribes in enhancing treaty protected rights.

The feelings, preferences, and expectations people have for the Forest and its management and use are another area of expressed social concern Several respondents indicated that the national forests were established for multiple use, and that management should retain or promote the traditional uses. Strongest concerns were expressed about grazing, ponderosa pine harvest, and recreation. Grazing was supported as a historic use, important before the Forest was established. A few people felt the Forest has provided important recreational opportunities that were being lost to changes (special classifications) and closures, as reflected in: "Special interests have control;" "can't fish or hunt in areas used for years;" or "Forest is now expensive playground for elite " Several stated that the land has been used for many years without harm and should be left or managed that way (including selective timber harvest). Others were concerned about past impacts and adverse effects ("historic abuse") of timber harvest, livestock grazing, and mining. A particular concern was that these activities created the necessity for expensive restoration efforts.

An overwhelming majority of the responses specifically stated that management of the national forest should be geared to provide for the needs of our future generations. Many responses stated that a "multiple-use" concept was the way to attain that, although they were divided on the interpretation of the concept. Another concern addressed in the statement that the Forest should benefit all now and in the future, was directed toward the economy of our area, the state, and the Nation: "Manage our timberlands to insure sustained-yield as well as a sustained economy." Some supported specific alternatives

FOREST COORDINATION

Some respondents indicated that the Forest coordination efforts should extend to the many interested Federal and state agencies in order to integrate, coordinate, and balance management efforts for programs such as fisheries, big game, minerals, recreation, water resource, conservation of endangered species, and timber harvest management.

Counties (and cities) indicated that the Forest Plan should be compatible with the comprehensive plans of local counties and communities.

Some organizations and individuals offered to be involved in the development of plans. Their concerns emphasized employment, economic impacts, and resource management impacts on Forest users and adjacent landowners.

PLANNING

OVERVIEW

Challenges and counter challenges were made about the proposed Plan statements and conclusions. Some respondents indicated the Forest had done a good job and the proposed Plan, or parts of it, were positive. However, most comments challenged proposed management of nearly every resource, land use, or activity from economic, social, or environmental perspectives. Most public or agency concerns dealt with their concept of what forest management should be, how the laws and regulations should be met, and how the needs and requirements of respondents could be met. In general, most respondents asked the Forest to do a better job of clarifying the vision for the Forest (structure and direction), describing the uncertainties, reducing the (emphasis on) conflicts, and emphasizing/exploring the compatibilities of resource management. Many of the more indepth comments on planning dealt with presentations, formatting of data, summaries and tables, supporting explanations, or missing data the respondent felt was important.

LEGAL REQUIREMENTS

One of the first steps in forest planning is to meet legal requirements All forest plans must comply with numerous laws, statutes, and regulations including the following: Organic Act of 1897, 16 USC 475; Multiple Use-Sustained Yield Act (MUSYA), 16 USC-528-531; Forest and Rangeland Renewable Resource Planning Act as amended by the National Forest Management Act (NFMA), 16 USC 1601, et seq; National Environmental Policy Act (NEPA), 42 USC 4321, 4331-4335, 4341-4347; and numerous others. Many respondents felt the proposed Forest Plan falls short in this area. However, a wide range of interpretations of these acts exists from people with broadly differing perspectives.

Inadequacies were thought to exist in the DEIS and proposed Forest Plan, especially regarding conformance to NFMA, NEPA, and the CFR's (Code of Federal Regulations). A variety of resource areas or land uses, treaty rights, social concerns, and planning process items was said to need improvement in order to meet legal requirements.

MANAGEMENT AREAS

Some respondents felt that the management strategies were well thought out, and the proposed Plan had an excellent, broad spectrum of allocation choices; but still needing some modifications. Other respondents felt that additional strategies should be developed that down play the exclusiveness of a zone. They believe that zoning into exclusive emphasis areas would create conflict and polarization of user groups, disallowing harmonious management of resources.

Suggestions for change included four primary categories: (1) Clarifying management area direction for sensitive plants, snowmobile use, timber harvest prescriptions, watershed basins, and fish management areas; (2) modifying direction for threatened and endangered (T&E) species, future RNA's, mineral activity, timber harvest in big game winter ranges, and old growth dispersion; (3) adding new management areas, including one for timber/recreation to provide moderately intensive timber management with quality OHV opportunities and another with multi-resource management without emphasizing any particular resource; and (4) applications to, or removal of, specific areas or situations.

Other specific comments received on the management areas topic indicated that the Forest should strengthen management prescriptions relating to riparian areas, sensitive plant species, and old growth and Research Natural Areas to protect these areas from direct, indirect, and cumulative effects of resource management activities. Some felt that the "managed" old growth concept would not work, and complete protection should be given to all or most existing old growth on the Forest. In addition, they thought timber management regimes were not attainable (yield tables make too many optimistic assumptions), and respondents questioned the Forest basic biological understanding of vegetative management.

SPECIFIC MANAGEMENT AREAS

Comments were received on every management area (A1 through F4), and about half the comments dealt with on F4 Walla Walla River Watershed, F2 Mill Creek-Undeveloped, and C8 Grass-Tree Mosaic (GTM).

Most of the comments on the individual management areas came in the form of specific recommendations for modifying or improving the individual strategies, for clarifying standards and guidelines portions of the

strategy, for applying management direction to specific areas, and general comments for not using the direction as proposed.

FOREST-WIDE STANDARDS AND GUIDELINES

Comments on the Forest-wide Standards and Guidelines were numerous, varied, and often specific. Some support was expressed for the Forest-wide Standards and Guidelines providing adequate guidance. Interest covered nearly every resource area and generally indicated a need for change. Respondents provided numerous recommendations for improving, modifying, or clarifying the Forest-wide direction. Particular concerns were for strengthening the areas of wildlife, fish, water, soil, and riparian areas and for measurable Forest-wide Standards and Guidelines which allow monitoring and feedback. Suggestions were made for improvement in the areas of T&E species, old growth, riparian areas, water, fish, soils, range, big game habitat, nongame species, recreation, minerals, and a few new proposals were made as well.

PLANNING AREA & PLANNING PERIOD

Some respondents mentioned that it is not enough to consider impacts within the Forest boundary; activities in the Forest affect downstream Native American tribes, fisheries, surrounding communities, and adjacent landowners. It was noted that managers with authority over land and resources must realize that their decisions may have significant impact on offsite peoples and resources. An example was given that Forest management decisions can significantly effect offsite fishery management or the fishery resource itself. Another example was the expressed concern about the impact of elk herds that the Forest may promote can be a significant cost to the area's ranching industry.

Others called for a geographic breakdown by watershed or district, to better estimate environmental needs and effects.

Regarding the planning period, various respondents said that the Forest must "realistically maintain a certain harvest level (near current levels) and that harvesting can't be stopped just because we don't have all the answers". Some wanted high quality ponderosa pine harvesting options maintained through the planning horizon. Others felt that the Forest must preserve options for the future, but concentrate on soil and water; some urged that the Forest Plan for the long term, even if it meant some hardships in the short term. Some respondents thought that the public should not have to subsidize the timber industry at the cost of losing forever the remaining old growth forests. Commenters noted that, in the long term, these old forests should serve economically as they become increasingly popular with recreationists: "Eventually, we should learn how to harvest and still be sure that our descendants will have beautiful and useful forests."

A few wanted additional information, including clarification of the proposed Plan's roadless area entry though time, changes in cubic foot to board foot ratios over time, and old growth entry or retention during the planning decades.

INFORMATION (DATA BASE) AND MODELS

Various concerns were expressed about basic information used in the Forest planning models and in the proposed Plan itself.

Some concern was expressed about perceived inadequate information (inventories) or data related to timber, old growth, riparian areas, range conditions, roadless areas, and threatened, endangered, and sensitive (T/E/S) animals and plants. A number of comments dealt with a perceived need to update the timber inventory so as to reflect recent harvest and growth and recent losses due to insects, diseases, and fire. Several comments concerned the reduced level of ponderosa pine in the inventory, and its effect on the vegetative character of the Forest. These people wondered what the Umatilla is doing to correct this reduction, and how much high quality ponderosa there would be in the future. Others thought that gaps in the inventory age-class distribution might skew FORPLAN outputs Some commented about the overall lack of information about current Forest conditions from which to judge change. They particularly focused on and asked for a better inventory and display of old growth and riparian condition and potential.

Use of FORPLAN brought comments in three general areas: Validity of the model concept; model operations in general, and the accuracy of basic data or assumptions used in FORPLAN. A few thought that FORPLAN was not understandable, and that the public is "at the mercy of computer programmers." A few others felt the model did not simulate (instead it optimized) actual harvest, prohibited confirmation of adequacy of

information analysis, and couldn't be duplicated in the field. Others wanted clarification of how the model tracked old growth, and how silvicultural systems were determined (model vs. manual).

Most interest in FORPLAN related to proposed changes in topics of concern to the respondent, as follows.

- Deer and elk winter range - permit harvest;
- selection harvest - need to model;
- snag (minimum) management requirements (enough, not enough);
- forest growth and yield - insufficient young stand growth, overly optimistic, conflicts in data,
- costs - not realistic;
- inventory information - poorly handled and displayed;
- harvest level base comparison - wrong years as base;
- timber values - inadequate;
- pine harvest - increase;
- recreation - undervalued; and
- demand assumptions, values assigned resources - inadequate

IMPLAN (economic model) also received some scrutiny and comment Most comments related to the following: The old data base (need to update); desire to develop specific or likely impacts to individual communities; effects of ponderosa pine harvest, expenditures by counties and Forest Service; hunting and recreation activities; clarification of employment and income multipliers derivation; and a general review of conclusions.

Several people didn't believe the yield tables were realistic, they felt growth and yield were overestimated; and thought they should be updated to show reductions due to insects, disease, fire, and catastrophic occurrences. There was also concern that genetic gain was unproven and shouldn't be used because the effects of a reduced gene pool have not been sufficiently analyzed.

PLANNING ANALYSIS

Economic Analysis

The greatest number of comments on economic analysis concerned the perceived bias towards timber and other commodity outputs Several respondents felt timber values were overestimated, and noncommodity values (recreation, fish, and wildlife) were either grossly underestimated or not even included Some people felt this was due to commodity outputs being managed for maximum output, and noncommodities being managed for minimum outputs Some respondents indicated that recreation was undervalued, and that the demand for developed recreation, trails, and semi-primitive recreation is much higher than shown in the DEIS.

A number of others, with opposing viewpoints, commented about the perceived inadequacies in future timber demand projections, in valuation of ponderosa pine, in the analysis of jobs, personnel income and county revenues, and in ASQ relationships.

Cumulative Effects

Cumulative effects analyses were thought by some to be inadequate or biased. One general impression was that the Forest "skewed" the anlaysis in favor of commodity resources in a "status quo" process. Another theme was that the Forest did not go far enough in addressing cumulative economic impacts. Improvements or changes in cumulative effects analyses were suggested in the following areas

- Consequences of sedimentation; consequences of changes in water temperature, quantity, and sedimentation on adjacent private lands;
- closure of roads to public use on much of the Forest;
- botanical areas;
- old growth forests and conversion from natural to managed forest;
- downstream fisheries and Indian treaty rights;
- road construction increases;

- implications of management on health and sustainability of the Forest; and

- timber program changes on communities, private lands, and other national forests.

Mitigation

In general, one tone of the responses on mitigation indicated that the Forest has not done an adequate job in several areas regarding mitigation measures These respondents indicated a rather high level of distrust in both content and follow-through, as expressed by the thought: "mitigation measures listed were in effect just a "generic" list of broad generalities." Mitigation is perceived as a rational for developmental activities. Specific things are not shown; people did not understand what was shown, to some extent, and they felt we would treat mitigation measures for admitted resource losses as discretionary function, depending upon funding (sorry, but no dollars are available). Others moderated that mitigation (along with monitoring) is integral to success of management activities and suggested additional mitigation. Specific concerns mentioned include soil compactions, RNA's, sensitive plants, tourism, jobs, fish productions, Native American rights, snags (lack of) on private lands, big game forage enhancement, seasonal road closures, and analysis of effectiveness of mitigation.

Other Analysis

A number of suggestions was made with respect to the Forest analysis, including: (1) Provide more emphasis (analyses) on soils, soil productivity, mule deer, changes in elk numbers and protection of Indian rights; (2) clarify elk population and timber harvest tradeoffs and recreation assumptions for scenic primitive recreation; and (3) modify HEI and barometer watershed results applied to large areas suitable for timber.

MONITORING

The majority of the specific comments about monitoring was from organizations and agencies. Monitoring was generally viewed as important to the success of the Forest Plan. However, none of the comments was supportive of the proposed monitoring plan The tone of the comments reflected lack of trust and lack of information.

Monitoring Forest-wide Standards and Guidelines, in many respondents' views, is the most important part of the Plan. Some of the public wanted us to prove that the Forest-wide Standards and Guidelines are meeting management objectives rather than that they monitor that the Forest Service is performing the Forest-wide Standards and Guidelines. Some suggested that more detail in the monitoring plan is needed to determine if our methods are good enough to measure the effectiveness of our management strategies over time. Some expressed concern that budgets were insufficient to do effective monitoring, particularly where developmental activities occur; others would prefer that monitoring capabilities be assured prior to initiating activities. Also, some respondents noted that a better explanation of the feedback mechanism is needed to apply monitoring results to needed management practice changes; standards for correction should be displayed.

Comments indicated that a more effective monitoring program is needed, specifically in the following areas:

- Assessment of timber harvest impacts on old growth dependent species, including better baseline information on indicator species, verifying MR assumptions, links between indicator species and mammal and bird populations, and more sensitive triggers for review or change when impacts are found significant.

- Assessment of effects of timber and range management on big game populations and winter range.

- Recovery of riparian zones, and verifying assumptions of fish habitat improvement projects and habitat capability index.

- Assess the impacts of timber management activities on water quality and fish populations.

- More detail on water quality and continuing the barometer watershed study.

- Cumulative effects of sedimentation, sediment yield, and sediment from roads and improved detail on soil compaction and erosion.

- More detail or "stricter" monitoring on range use, grazing permits, and impacts of grazing.
- All aspects of the timber management including timber harvest levels, species mix, plantation success and health, tree growth, nutrient cycling.
- Effects of OHV's and snowmobiles.
- Assessment of timber management programs on economic indicators of jobs, personnel income, and county receipts.

RESEARCH NEEDS

Comments on research indicated some support for further research to increase knowledge and make better decisions, reduce costs, avert resource losses, and realize management improvements. Research tends to become mixed or confused with inventories and monitoring Some were concerned that we are managing without having a sufficient research base, or that we don't have the budgets for research. Support exists for changing the Forest Plan based on the most current research results.

A number of specific concerns or suggestions for further study on the following were made:

- Timber harvest and elk relationships,
- indicator species (MR's), riparian and old growth;
- timber management and mixed species;
- timber harvest effects on water, fisheries, riparian areas;
- timber supply;
- economic effects of management activities; and
- mitigation techniques.

PROJECT PLANNING

Only a few addressed project planning specifically; comments received in this category generally applied to other topics. A major concern was that the direction stated in the EA's and proposed Forest Plan should be what happens on the ground.

FOREST MANAGEMENT

OVERVIEW

Agreement could apparently be reached between the various respondents on the fact that the Umatilla National Forest and its many resources represent something very special to each of them Many comments revolved around a concern for proper management of the Forest in order to preserve and protect the Forest for current and future generations. However, their association with the Forest and how they want to see these resources managed varied greatly

A variety of perceptions was expressed by persons who would like to see "their" forest developed. Some of these are:

- That with proper management the Forest will produce jobs and all of the many forest resources needed to help support local economies and school systems, and the Forest will remain healthy and produce logs forever.
- That many or all forest uses are compatible, and that the many restrictions placed upon the production and utilization of timber and forage due to assumed negative impacts on other values and resources are unrealistic.

- That the Forest can support a high to very high level of timber harvest with proper forest management.

- That by opening up the remaining roadless areas on the Forest, the impact of timber harvest activities would be minimized by spreading the impact evenly over a much larger land base.

- That the Forest Plan should emphasize commodity production and "use" of resources to provide a strong economic base for the local economy.

- That if trees are permitted to rot in the forest, they are wasted.

- That management strategies such as GTM (grass-tree mosaic) are designed to keep lands undeveloped so that they can be evaluated for wilderness when the proposed Forest Plan is revised.

- That management strategies other than D1 Range and E1 Timber/Forage are designed to benefit either small groups of people, such as backpackers, hikers, or horseback riders in wilderness areas, who may have some special advantage over the rest of the people; or to protect resources such as recreation, wilderness, wildlife and fisheries, and watersheds that don't really require special protection beyond that which is afforded by proper forest management. The extension of this perception is that the majority of the people are locked out of much of the Forest by special interest groups and the government.

A second group of respondents identified with a much lower level of resource production. Some of their thoughts and perceptions follow:

- The Forest is being requested to protect each and every forest resource: (1) to protect the ecological stability and natural state of the Forest (by maintaining the remaining old growth trees, reducing the emphasis on timber management, and increasing the practice of uneven-aged forest management); (2) to increase emphasis on the noncommodity values of the Forest (recreation being the most mentioned) to make it possible for future generations to have the same opportunity to experience the undeveloped Forest as have previous generations; (3) to support a balanced management of the Forest; (4) to provide wise stewardship of public property (the Forest); and (5) to have the Forest provide those opportunities that the private sector cannot or will not provide.

- Certain birthrights of some citizens are perceived as being denied them. This is because some feel present and proposed management of the Forest will disenfranchise these citizens from public forests, by not allowing them to see natural, unaltered forest conditions. Altered conditions are the result of developmental and other activities being permitted at a certain pace, in certain areas, and by certain methods, while the desire of these respondents is to either not permit or to severely restrict these same activities. There is a feeling that the Forest is being exploited primarily by the timber and grazing industries and turned into a tree farm and cattle ranch.

- A difference was seen between developing (destroying) some resources that will not return to their unaltered condition for long periods of time, if ever, and denying or modifying resource development in the foreseeable future. The first situation involves threatened and endangered fauna and flora, old growth forests, old growth dependent wildlife species, old aged ecosystems, soil productivity, and fisheries; actions with which, once initiated, only time can reverse. The latter case involves extending timber rotations, creating special management areas such as wilderness or scenic, or recognizing special management situations such as wild rivers, Research Natural Areas, botanical areas, and GTM areas; actions which may be reversed any time legal authorities deem the need for resource production to outweigh resource protection.

- Some thought that all forest uses are not compatible, and that spreading out the development (so as to make it less noticeable) is not acceptable. This group of forest users requires a unique, wild environment for their enjoyment of the Forest, which is the reason they go to the forest. They need the stimulation of aesthetics; of contrast (to human life and activities); of history and the unknown; of the living museum that is the land; and they require the strength, greatness, rejuvenation, and hope that lie in the complex balance and beauties of untouched nature – the trust that something is better, and that enough of it is safe from society's impacts, and will be there forever. To have most of it compromised by common sights and sounds found elsewhere, or to have biological diversity reduced to trees and cropped "forage" was unacceptable.

A third smaller number of respondents expressed the thought that the public forests need to be managed for the sustained utilization of natural resources. Some of this group expressed a desire to actively use the Forest for both commodity and noncommodity uses; others indicated a need to emphasize multiple use while providing a balance between economic and social benefits and environmental conservation. The concern here was not with altering the forest, but with insuring that management does not permit development activities to exceed sustainable levels.

MULTIPLE USE

There appears to be broad support for the concept of multiple-use management on the Forest. However, there also appears to be: (1) a wide difference in how the term multiple use is interpreted; and (2) a clear misunderstanding of what is acceptable under the Multiple-Use Sustained-Yield Act of 1960.

Some respondents identified with the Multiple-Use Sustained-Yield Act of 1960, the Oregon Wilderness Act of 1984, and/or The Washington State Wilderness Act of 1984. They used these acts to support their contention that all nonwilderness national forest lands are required to be managed for multiple use, and accomplishing this objective would require the development of all roadless areas. Areas classified with management strategies which do not permit timber harvesting, grazing, and/or mining were viewed as areas "locked up" for special interest use—areas managed for single, not multiple, use, and therefore outside the direction of the three acts identified above. Multiple-use management and timber harvest were viewed as synonymous. (There was no recognition that the definition of multiple use in the Multiple-Use Sustained-Yield Act accepts that "some land will be used for less than all of the resources," or that it identifies that "the establishment and maintenance of areas of wilderness are consistent with the purposes and provisions of this act.") This interpretation of multiple use of forest lands was viewed to result in long-term benefits for future generations by managing the land. Areas which do not permit development were viewed as single use areas. Single use management of the land was viewed as nonmanagement which would result in very few benefits to future generations. Road development was viewed as a facet of multiple-use management, in that most roads developed to access timber for harvesting are eventually used for a variety of activities.

Multiple-use management as defined by other respondents is balanced resource management which seeks to preserve the integrity and the diversity of the forest environment, and involves the total ecosystem. This position states that national forest land should be managed for all citizens through multiple-use management, meaning:

- That all resources should receive equal consideration,
- that segments of our society, such as the timber, cattle, or mining industries, do not have exclusive use of some of the forest resources and should not be allowed to treat the Forest as though it were private land; and
- that recreation values of the Forest should be maintained

This group argued that inherent resource values, not economic considerations, should determine the primary use of an area of land.

SUMMARY OF PUBLIC COMMENTS ON ALTERNATIVES

Comments on management alternatives concentrated primarily on two new alternatives proposed by the public. The "Citizens for Multiple Use and Conservation Alternative" (known as the Multiple-Use Coalition Alternative) was developed by a coalition of timber industry representatives, miners, ranchers, business owners, OHV enthusiasts, local elected officials, and others, and "Citizens Alternative E" was proposed by several local environmental groups. These two new alternative plans were promoted widely and won the majority of the public's endorsements. The Forest Service preferred Alternative F received support for being a good, balanced plan, although most who commented on F opposed it, said it was not balanced and it was too commodity-oriented The Forest own Alternative E also received heavy support.

The stated purpose of the Multiple-Use Coalition Alternative is to produce sufficient commodity outputs (timber, range, minerals, and water) to maintain or improve the economic and social stability of local communities. The Multiple-Use Coalition Alternative calls for the following major points: maximize the portion of the Forest devoted to multiple-use management, maintain existing wilderness, allocate most remaining

roadless areas to multiple use, maintain wildlife populations, allow for 171 MMBF of timber to be harvested annually, maintain historic levels of ponderosa pine harvest, maintain or increase grazing levels for domestic livestock, maintain existing mineral development accessibility, develop OHV recreation use, and encourage trail construction and increase monitoring. (Additional detail is provided in the next section.)

The Multiple-Use Coalition Alternative was supported by more people than any other. It was endorsed primarily by means of a check-off questionnaire included in an information brochure. These materials were distributed by Citizens for Multiple Use representatives who spoke to numerous groups about their alternative. The brochure explained the Forest Service proposal and suggested changes. The representatives explained that their alternative would meet the stated goals and major points, would protect and enhance important amenity and environmental values, would do little to change big game populations or water quality, and would provide hunting and fishing experiences and greater opportunities for outdoor recreation.

Alternative **E** emphasizes recreation, wildlife, and amenity resources. Vegetation management, including timber harvest, is relatively low (81 MMBF per year) and directed at economically and environmentally feasible levels that maintain or improve the above resources. Major points are nondevelopment of all roadless areas; and high levels of primitive/semi-primitive recreation, wildlife (game and nongame) and fish habitat, riparian protection, and visual and water quality. Citizens Alternative E expanded or modified some of those points and stressed the following major points: retain all 22 roadless areas; provide maximum protection to Mill Creek and Walla Walla River; retain (or create) multi-storied, multi-aged, mixed species forest stands and eliminate clearcutting; protect all old growth from timber harvest and complete field-verifiable old growth inventory, propose Wild and Scenic Rivers status for four rivers (shown in the proposed Plan); increase road closures and reduce road construction; re-evaluate economic forecasts for all uses especially tourism, recreation, and sports; and emphasize trails including construction of the Blue Mountain Trail (see next section for additional details).

The essence of the **E** alternatives lies in a philosophy of aesthetics and biological integrity. Supporters doubted that the perceived intensive management in the proposed Plan can sustain "in perpetuity" the qualities of a naturally-evolved forest, or even a tree farm. They expressed firm convictions that these "commodity/extractive" practices will render the Umatilla Forest aesthetically diminished and will place its biological integrity in jeopardy. They believed forest management should not be based on economics, but if so it should be recognized that noncommodity values have been vastly underestimated and misunderstood, and that the proposed intensive management is not in the best interest of anyone, including industry.

It is interesting to note that those supporting development and those favoring preservation or limited development believe their alternatives exhibit "true multiple use" and a better balance between economic and amenity interests.

Next in favor by some of the respondents were four alternatives (**J, G, C,** and **D**) which inspired careful study and "second-choice" comment. Alternative **J** was well-liked by some for having a recreational bent and a large amount of roadless area retained. Some people objected to its high level of motorized recreation, which was said to cause severe resource damage and disturbance to other forest users, but OHV enthusiasts were very pleased with this level of A2 (dispersed motorized) areas. Alternative **G** was well liked by others for its particular mix of big game habitat emphasis, vegetation management methods, quality water, and moderate timber harvest levels. Some preferred Alternative **C** for various environmental pluses, including protection of roadless areas. In general, both **C** and **D** were said to be "compromise alternatives" more acceptable to conservationists. Of the two, Alternative **D** received the most praise and extensive comment. Some said that this alternative significantly out-produced Alternative **F** in noncommodity resource outputs, without cutting back on timber receipts.

The remaining alternatives brought an insignificant amount of specific response and support. Alternatives **H** and **I** were simply dismissed by some as environmentally unsound with a much too high commodity emphasis. These respondents raised the same objections to Alternatives **A, B,** and **F/D,** although other respondents preferred them. Alternative **B** was desirable to a few for its retention of all the roadless areas. Alternatives **A** and **F/D** were desired by a few others for their commodity levels and returns to the economy. Some others opposed these alternatives and said that Alternative **F/D** moved too fast "in an area of unknowns," and Alternative **A** (the No Action Alternative) should be renamed the Business-As-Usual Alternative ("for there is plenty of action .").

In general, comments on the alternatives followed the same trends and split in philosophy as the comments on major subject areas. Two principal, widely differing approaches were evident as seen in the proposed alternatives. Many supported alternatives with amenity or environmental emphasis. Many of their comments

on all alternatives were critical of their being too commodity-oriented, particularly in regard to grazing and timber, and too open to OHV's. It was also said that OHV information was vague and inadequate in all alternatives. Some wanted a wider range of options, including zero grazing and zero additional road building. Many called for alternatives to even-aged management. A true no action alternative was said to be lacking. However, many others supported alternatives with a commodity orientation, emphasizing timber, grazing, and OHV use. Some suggested more departure alternatives for use when the sale schedule would cause a substantial adverse impact on a community. The timber industry pressed for an alternative and/or analysis that addresses higher levels of ponderosa pine.

SUMMARY OF NEW ALTERNATIVES SUGGESTED BY THE PUBLIC

Two alternatives were proposed by various groups during the comment period, and are summarized and described below:

Local timber industry representatives, miners, ranchers, OHV enthusiasts, and local elected officials developed an alternative entitled the "Citizens Multiple Use and Resource Conservation Alternative." This alternative has the following stated overall management philosophy:

> It is imperative that final forest plans produce sufficient commodity outputs (range, timber, minerals, and water) to maintain or improve the economic and social stability of local communities.
>
> The final Forest Plan should emphasize true multiple-use management of the Forest's nonwilderness lands to provide high levels of needed commodity outputs while protecting and/or enhancing important amenity and environmental values.

To achieve this objective the final Forest Plan should:

- Maintain or increase the ponderosa pine harvest (at 35 MMBF/year), and include a first-decade annual allowable sale quantity (all species) of at least 171 MMBF;
- examine opportunities for uneven-aged management where biologically and economically feasible, but not adopt if practices would reduce the Forest timber production potential;
- retain the level of permitted range use proposed in the draft Forest Plan (59.5 M AUM's/year);
- maintain the Forest's current level of mineral exploration and development accessibility;
- provide quality OHV recreation opportunities in key areas; include a high level of funding for trail construction;
- not allow scheduled timber harvest in the Mill Creek Watershed, and manage the Walla Walla Watershed as proposed in the draft Forest Plan;
- retain scenic area designations for the Vinegar Hill–Indian Rock and W-T Three areas as proposed in the draft Forest Plan,and retain scenic area designation for those parts of the Grande Ronde scenic area visible from the Grande Ronde River;
- with the exception noted above, all the roadless lands released by Congress in 1984 should be accessed and managed for multiple uses,
- not identify areas termed "grass-tree mosaic";
- maintain only enough old-growth timber to reasonably ensure the maintenance of viable populations of "dependent wildlife species";
- maintain the Forest deer and elk herds at population levels compatible with all available year-long rangeland resources, both public and private; remove harvest restrictions on big game winter ranges; emphasize direct habitat improvement (to provide quality forage) and utilize temporary road closures (for habitat security and "quality" hunting);

- keep options open for timber harvest in riparian areas; emphasize mitigating measures and direct habitat improvement projects for fisheries;
- recommend no additions to the Wild and Scenic River system;
- limit visual quality constraints to the most critical viewing areas;
- include the RNA's recommended in the draft Forest Plan; and
- increase monitoring of the effects of timber and range management on big game populations, water quality, and fish populations.

2. A coalition of environmental groups developed an alternative which they entitled "Citizens Alternative E." This alternative has the following stated purpose:

   Recreation opportunities, wildlife habitat, and amenity resources of the Forest are emphasized in this alternative by promoting noncommodity goods and services (those without established market prices). Vegetation management including timber harvest is relatively low and directed at economically and environmentally feasible levels that maintain or improve the above resources. The alternative was formulated to resolve a range of issues and concerns related to recreational, wildlife habitat, and amenity values as follows:

   - Emphasize aesthetics and biological integrity in management of the Forest;
   - maintain all roadless areas, enhance wilderness, provide Wild and Scenic River status for the Forest four rivers, and maintain scenic and other special areas;
   - provide semi-primitive and primitive dispersed recreation at highest levels;
   - increase trail construction, including the Blue Mountain Trail;
   - provide maximum protection for Mill Creek and Walla Walla watersheds;
   - provide for a high level of Forest-wide visual quality including most viewsheds, roaded natural settings, and other areas;
   - manage timber stands to retain multi-storied, multi-aged, mixed species and eliminate clearcutting;
   - reduce road construction and reconstruction and increase road closures (permanent) for big game enhancement;
   - reduce land available for grazing and increase user fees;
   - provide for high levels of old growth timber and protection from timber harvest; complete a field-verifiable old growth inventory;
   - provide for game and nongame habitat at highest levels to maintain or increase potential wildlife populations;
   - increase resident and anadromous fish production;
   - protect and improve riparian areas and improve water quality well above state standards;
   - re-evaluate economic forecasts for all uses, especially tourism, recreation, and sports, and use updated, current biological research; and
   - increase monitoring, scoping, budgeting, and inventoring overall condition of the Forest.

The remaining comments which related to new alternatives were few in number and mentioned the following: No action, current plan, departure to address the ponderosa pine issue, or alternatives which revolve around raising or lowering the levels of timber harvest or grazing but staying within the range of alternatives presented in the DEIS.

STATE OF OREGON ALTERNATIVE

In March 1990, the State of Oregon developed a draft alternative which had a separate public review process apart from the public review of the DEIS conducted by the Forest (see State of Oregon Final Alternative for the Wallowa-Whitman National Forest, and the Proposed Alternatives for the Malheur and Umatilla National Forests). The state alternative focused on several areas with the intent of bringing consistency among the three Blue Mountain forests. Using the Forest Service Preferred Alternative in the DEIS as a base, the state recommended changes which are highlighted here:

Timber

- Pointed out the economic dependence of the local communities on the timber industry and suggested that the Forest provide the "highest sustainable timber harvest level compatible with other resource values."

- Recommended that the suitable timberlands be the same as the Forest Service Preferred Alternative in the DEIS; that the Allowable Sale Quantity be 125 MMBF; and that the Forest hold available that timber volume (estimated at 4 MMBF/year) that is presently (in FORPLAN) considered uneconomical for sale until the market changes to higher levels

- Because of the importance of the ponderosa pine component of the harvest on the Forest, recommended a stepped approach to reaching a sustainable level. Annual ponderosa pine harvest levels would begin at 24 MMBF for the first decade, drop to 22 MMBF for second and third decades, and reach a sustained level of 26 MMBF in the fourth decade.

- *Suggested that the Forest use uneven-aged silvicultural methods for the remaining two-story* ponderosa pine stands and for all ponderosa pine and mixed conifer types in riparian and viewshed areas (about 83,000 acres).

- Recommended that where the Forest finds it cannot meet both cover and timber targets (on timber or timber/elk emphasis management areas), the timber target should prevail until Forest Plan amendment or revision.

Livestock Management

- Maintain DEIS level of grazing (54 5 M AUM's), and add range improvement projects, improved grazing systems, and protection and enhancement of streams and riparian areas.

Big Game Management

- Oregon's proposed alternative for the Forest included emphasis and measures aimed at promoting elk numbers and habitat. Suggested that Forest Service should consider overall HEI levels and HEI component levels.

- Recommended that open road density maximums be set at 1.0 mile per square mile on winter range and 1 5 miles per square mile on summer range to help reduce impacts on elk; that prescribed HEI and cover levels for various management areas (prescriptions) be adopted, that providing cover should be considered on all acres where timber is harvested, that forage be incorporated into the design, implementation, and monitoring of big game habitat; and that cover targets should prevail until there is Plan amendment or revision on elk emphasis areas.

- Suggested that monitoring be of HEI and components of HEI and done on a subwatershed basis

- Cooperative efforts should be undertaken to enhance forage.

Old Growth

- Propose maintaining old growth at the DEIS level of 35,000 acres (the MR level) for mixed conifer, and ponderosa and lodgepole pine types .

Fish Habitat/Water Resources

- A central theme in the Forest Plan should be nurturing and enhancing the anadromous fishery.

- Recommended no scheduled harvest in riparian areas (within 100 feet of stream) for major (Class I and II) streams and reduced harvested for riparian areas along minor (Class III) streams. Special recognition was to be given for the North Fork John Day River.

- Emphasized using stream enhancement projects for anadromous streams, using measures to minimize impacts of timber harvest and road building on water quality and quantity, and using techniques to control or improve livestock grazing in riparian areas.

Roadless Areas

- Recommended leaving the same areas (and acres in Oregon) undeveloped as proposed in draft Forest Plan; in the GTM areas, the Forest should assess the feasibility of selective harvesting for compatibility with big game habitat.

Recreation/Visual Quality

- Proposed management of identified scenic routes for their visual/scenic quality; advocated protection of dispersed recreation sites.

Implementation/Monitoring

- Supported the Blue Mountain Initiative for big game research and management.

Other Factors

- Listed and discussed some other factors of concern that include timber inventory, importance of the Forests to local economies, tribal rights, and research needs.

Oregon's proposed alternative was presented to the Forest during the last weeks just prior to publication of the FEIS and Forest Plan. Therefore, it could not be included as a fully developed alternative. However, the Forest has worked closely with the state representatives since publication of the Forest draft documents. While not appearing in this chapter in detail, the state's suggestions and recommendations were given strong consideration and became the object of many discussions between the Governor's forest planning team and the Forest. As a result, the state's alternative is similar in many aspects to Alternative **F/M** which is displayed in detail.

RESPONSE TO SUBSTANTIVE PUBLIC COMMENT

INTRODUCTION

As part of the comment review and analysis process, the Forest identified substantive comments on the Draft Environmental Impact Statement and proposed Forest Plan (40 CFR 1503.4). A substantive comment is defined as: "a comment that provides factual information, professional opinion, or informed judgment germane to the action being proposed" (Forest Service Handbook 1090.5). The comments in this appendix contain the "substantive" comments A few comments may be interpreted as opinion or preference. These were included in this section to give the reader a feeling for the broad range of comments the Forest received and to help clarify and develop an understanding about various points of Forest planning and management.

Comments are grouped by general subject matter, as outlined below, and summarized because the public response was large (see 40 CFR 1503.4(b)). Comments were extracted from the letters and may or may not be paraphrased; attempts were made to accurately capture and display each substantive comment. The *Forest response follows each comment. A direct tie exists between the responses to the public comments* and the content of the FEIS and Forest Plan. Whenever possible, a reference is made in the response to the exact location in the documents wherein the reader may find changes and/or supporting information. *Abbreviations have been used throughout the appendix; a list of acronyms can be found in the FEIS.*

Comments were considered without regard to the author's location, occupation, or lifestyle. Each comment is valuable whether "substantive" or not; opinions, feelings, suggestions, and observations were all read carefully and evaluated. Each comment was weighted on its own merit for substance and against legal, technical, and resource capability constraints Using professional judgment, the Forest assessed and considered all of the public comments, individually and collectively.

The Forest responded to comments in a variety of ways, (40 CFR 1503) which involved:

1. Modifying alternatives including the proposed action.
2. Developing and evaluating alternatives not previously given serious consideration by the agency.
3. Supplementing, improving, or modifying the analyses
4. Making factual corrections.
5. Explaining why the rationale, authorities, and sources were used in the DEIS and why the Forest position is maintained in the FEIS.

The Forest will be different as a result of the comments. The Issues, Concerns, and Opportunities for the Forest were given a new emphasis as described in Chapter I of the FEIS. Many suggestions were incorporated and changes were made to the Plan, as evidenced by the Preferred Alternative Numerous suggestions were detailed and specific; many of these are not summarized in this appendix of comments but were, nevertheless, used in making changes and improvements.

The comments and responses are further steps in a continuing dialogue with the public. Extensive public participation has been valuable in improving the future of the Forest.

WATER

MILL CREEK/WALLA WALLA WATERSHEDS

COMMENT NO. 1: The city of Walla Walla and the Forest Service have jointly managed the Mill Creek Municipal Watershed since the early 1900's, and we feel the F2 and D2 management strategies are the best strategies for preserving and assuring quality in this area's domestic water supply. We do not support the F1 strategy (Mill Creek Watershed-Limited Timber Harvest) because of potential water quality impacts

FOREST RESPONSE:

The city and the Forest Service have jointly managed the Mill Creek Municipal Watershed, under a cooperative agreement signed in 1918, to conserve and protect the municipal water supply for the city of Walla Walla. There has been overwhelming public support for maximum protection from development in the watershed The Forest Plan conforms to that consensus Although limited development under the F1 Strategy was considered in two alternatives in the draft EIS, the selected final alternative did not include the strategy. In the Plan, the watershed will remain undeveloped and in natural condition, except where activities associated with culinary (potable) water supply development occur.

COMMENT NO. 2: According to the Forest Plan, p. 2-65, Forest Management Direction/Goals; item 10; the USFS management of supply watersheds will be on a fee basis, to be paid by those who benefit from the management costs. Please clarify.

FOREST RESPONSE:

Established water rights preclude Forest Service control of water uses outside the national forest. After on-Forest needs are met, water leaving the Forest is available free of charge to users with historic rights. Congressional action would be required to authorize the Forest Service to collect user's fees. It should be noted that the city of Walla Walla and the Forest share the costs of maintaining a rider on the Mill Creek Watershed.

COMMENT NO. 3: We oppose the Forest Service Preferred Alternative and its F4 management strategy for the Walla Walla River watershed. We request that a Use Area Designation be assigned, giving highest priority to water quality and quantity, and prohibiting logging and new roads construction in the Walla Walla River watershed. This is not accomplished by the F4 designation. The F4 class (Walla Walla River watershed) lists water quality as a major concern and if logging were allowed, it could seriously damage this important resource.

FOREST RESPONSE:

Water quality and quantity have the highest priority in the Walla Walla River watershed These objectives can be accomplished by the F4 designation. However, the F4 Strategy and Management Area have been revised in the FEIS based upon public comments (see the Forest Plan map and the F4 Management Area description in Chapter 4 of the Plan).

The only lands retained in the suitable timber base for scheduled timber harvest acres that have been previously entered. In the North Fork area, these include Big Meadows, Huskey Spring area (west of Skyline Road 64), and the 6512 road system in Tiger Canyon and North Fork Salvage area. In the South Fork, the only lands available for timber management are those in the Target Meadows area, visual zones adjacent to Road 64, and one managed lodgepole pine old growth (C2) management area (adjacent to the Skyline Road). Some minor amount of additional roading may be needed in these areas.

The bulk of the watershed has been removed from the suitable timber base for scheduled harvest Most of the roadless area remains unroaded and the Forest has no plans for system road development within these areas See Forest Plan map for location of F4 Management Area boundaries

COMMENT NO. 4: The D2 strategy area is approximately one-third owned by the city of Walla Walla and the city is currently working with the Federal government on land exchanges that would expand its ownership in this area (Mill Creek Watershed). The city will need an additional water supply in the future and a dam and storage reservoir in this area are likely. We support the D2 Strategy Area only with the understanding that long-range plans for land exchange and water supply development will continue in this area. When these facilities become reality the D2 strategy area should be enlarged.

FOREST RESPONSE:

According to the proposed land exchange, the city will continue restricted use of its lands, consistent with the D2 and F2 Strategies, before and after reservoir development. The D2 boundary in the DEIS generally straddled Mill Creek, including much of the city's property. The research natural area boundary has been revised and the area now lies entirely south of Mill Creek. The revised RNA includes little of the city's present ownership Research which may be conducted in the Mill Creek RNA will be compatible with the city of Walla Walla's need for clean water. If conflicts occur between RNA objectives and provision of quality water, the F2 Management Area standard will prevail The Final Plan reflects the coordinated planning of the city and the Forest Service.

COMMENT NO. 5: Later in the summer is when the water (from the Walla Walla River) is of the utmost importance to me, when the very hot weather is really starting to take a toll on the fruit. I cannot afford for this water to be limited during that time.

FOREST RESPONSE:

The Forest acknowledged this need in FEIS Chapter I, Water Issues, and intends to pursue objectives that are supportive of downstream irrigation uses. The Walla Walla River Basin in Walla Walla County has been declared a Critical Water Supply Service Area under Washington State law because of declining levels in municipal water supplies served by the basalt aquifer. The Plan has as its goal for the F4 strategy: "provide high quantity and quality water and elk habitat effectiveness while sustaining or enhancing other resource values. Management activities will not substantially change the level of water discharge from the national forest during the May 1 through September 30 period." Water management measures shall be directed toward (1) protecting riparian areas, retaining snowpack, and minimizing loss of soil productivity, (2) monitoring water quality, quantity, and timing of yields, and (3) coordinating all resource activities to maintain or enhance existing water yields for irrigation between May 1 and September 30.

COMMENT NO. 6: The city of Walla Walla's economy is very much dependent on the agricultural and forest products and recreational uses provided directly and indirectly by the Umatilla National Forest.

FOREST RESPONSE:

The Forest intends to maintain the good working relationship we've had with the city over all these years. Activities of both the Forest Service and the city will continue to be compatible and coordinated where common interests are discerned.

WATER IN GENERAL

COMMENT NO. 7: The discussion in the DEIS on Forest management impacts on water yield, timing of flow, seasonal variation in flow, and peak flows is inadequate It is difficult to follow since the discussion is split between various topic areas. The Forest relied on the results of the Barometer Watershed study and did not consider other important research findings on the subject and specifically those which documented management induced changes. The discussion of seasonal flow variation was inadequate. The discussion of the Umatilla Barometer Watershed study was inadequate.

FOREST RESPONSE:

An updated discussion providing more detail on water yield, timing of flows, seasonal variations of flow, and the Umatilla Barometer Watershed study can be found in the Water section of Chapter III of the FEIS

An updated discussion of the effects of Forest management activities on these parameters is provided in the Water section of Chapter IV of the FEIS.

COMMENT NO. 8: The assertion on page 2-20 of the draft Forest Plan stating that 88 percent of the water produced on the Forest is used for irrigation is incorrect. Did the Forest mean to say that 88 percent of the total water consumed by off-Forest users is used for irrigation?

FOREST RESPONSE:

Your observation is correct The statement referred to is in error and has been changed in the final Forest Plan

COMMENT NO. 9: No list or map is presented for the 52 principal watersheds alluded to in the DEIS (p. III-4). No data is presented describing their current condition, harvest sensitivities, areas, or water yield. There is no systematic array of information for watersheds Forest-wide.

FOREST RESPONSE:

Maps denoting the boundaries of the 52 principal watersheds and the 250 subwatersheds comprising the Umatilla National Forest are included in the land management planning (LMP) process records. A map indicating the location of the 8 principal sub-basins on the Umatilla National Forest can be found in the Water section of the FEIS, Chapter IV. The Forest has not developed an overall rating system for "watershed condition" or "watershed sensitivities"; however, much information on several critical parameters related to these concepts has either been inventoried or scheduled for inventory These include (a) stream classification (maps in process records), (b) soil erosion hazard classification (from the Umatilla Soil Resource Inventory, 1978, in the LMP process records), (c) geological hazard maps (in the LMP process records), (d) existing fish habitat surveys and "Limiting Factors Surveys" of fish habitat initiated in 1988 (at the Forest Supervisor's Office), (e) range allotment condition and trends (at the Forest Supervisor's Office), (f) watershed improvement needs inventory (in progress), and (g) a future integrated riparian resource inventory/condition assessment scheduled for initial evaluation in 1989. Water yield information is not presented on a watershed basis since detailed data is not available for all drainages and the potential changes in water yield attributable to Forest management activities is very small. Existing information on water yield is summarized in Chapter III, FEIS.

COMMENT NO. 10: To define the land base for the analysis process, the Umatilla National Forest identified major subwatersheds, termed "allocation zones" within each ranger district. Forest-wide, there were 131 allocation zones identified and fixed for all alternatives (DEIS, p. II-3.). It appears that the level of management activities will vary among the allocation zones. See, for example, the Plan at page 4-36 (open road densities will be managed on an allocation zone basis and may vary between allocation zones). Although the incorporation of allocation zones into its analysis process could present useful information, the Umatilla NF failed to provide the public with any specific identification of where these allocation zones are located.

FOREST RESPONSE:

A map of allocation zones used in FORPLAN for the draft Plan is in the planning process records

COMMENT NO. 11: The Forest Soil and Water Improvement Inventory should have been summarized in the DEIS and/or included in an appendix.

FOREST RESPONSE:

A soil and watershed improvement inventory is not available at the present time. The Forest is in the process of developing a watershed improvement needs inventory. Accomplishment of needed watershed restoration activities is scheduled in the Plan, Appendix A. The watershed improvement needs inventory will be incorporated in the Plan, by amendment when completed, in the form of an action schedule for improvement projects.

EFFECTS OF ACTIVITIES

COMMENT NO. 12: The draft Plan and DEIS do not adequately address the potential of Forest management activities to influence the water yield of streams issuing from the national forest during critical low flow periods. The conclusion that there is little opportunity to increase water yield or effect timing of flows during this period is questionable. The national forest should demonstrate commitment to increase water yields during critical flow periods by retarding runoff from spring snowmelt events later into the summer or by other means.

FOREST RESPONSE:

The Umatilla National Forest recognizes the importance and potential benefits of maintaining and, where possible, enhancing the flow in Forest streams during critical low flow periods. Water management is recognized as an issue in the FEIS and tracked through the planning process. Attention to and resolution of the issues is central to forest planning. Discussion of the issue can be found in the revised Water and Soil section of Chapter II and the revised Water section of Chapter III, FEIS.

The Forest has no evidence, however, that it can significantly increase (or decrease) low flows through forest management activities as discussed in the Water section of Chapter IV, FEIS. Intensive monitoring of a variety of timber harvest practices on the Umatilla Barometer watershed has not indicated a detectable impact on late season flows. This finding is consistent with other studies conducted in the same hydrologic province The Forest is continuing efforts to study low flow impacts in the Umatilla Barometer watershed study. The study will include data from a broader array of more intensive timber harvest practices recently conducted in the watershed This effort is described in more detail in the Umatilla Barometer Watershed heading in the water section in Chapter III, FEIS.

Generally speaking, any improvements in riparian area condition have the potential to moderate runoff and, in some cases, improve late season flows. The magnitude of any such improvement would be highly conjectural and might not be detectable using conventional means. Nonetheless, some improvement in late season flow is a possible indirect benefit of the increased emphasis on riparian area management, the fish habitat improvement program, and the watershed improvement program provided for by the Umatilla Plan. The Forest will continue to search for and implement practical projects to improve late season flows. See Forest-wide Standards and Guidelines for Water, Plan Chapter 4, and FEIS Appendix D.

Although the Forest may have limited potential to change late season flows, the possibility may exist to influence the shape of the spring snowmelt peak hydrograph, through manipulation of the size, shape, and orientation of timber harvest units, as discussed in the Water section of Chapter IV, FEIS. A focus of future study of the Umatilla Barometer Watershed will be to analyze potential impact on timing. In drainages where off-Forest uses of surface waters are sensitive to changes in the spring snowmelt hydrograph, effects of timber harvest on timing of runoff will be considered in the project and area analysis level of planning. See the Forest-wide Standards and Guidelines for Water, Plan Chapter 4, and FEIS Appendix D.

COMMENT NO. 13: The DEIS predicts yield by alternative but fails to discuss the effects and potential consequences of sedimentation. The FEIS should explain what the implications are of the upward trend in sediment yield, in all alternatives for water quality and fish habitat conditions.

FOREST RESPONSE.

A revised discussion of the consequences of increased sediment yields is contained in the Water and Riparian/Fish sections of Chapter IV, FEIS.

COMMENT NO. 14: The Red Boy Mine and Black Jack Mine are listed as major contributors of point source water pollution (heavy metals) in the John Day River Basin. Are these active mines? Are or were these dischargers meeting the stipulations of their National Pollutant Discharge Elimination System (NPDES) permit? Are there efforts underway to correct these pollution sources? Do these sources consume assimilative capacity in the stream such that timber harvesting, road construction, and grazing are affected?

FOREST RESPONSE:

Both the Red Boy and Black Jack mines are inactive and, to our knowledge, do not have NPDES permits. The Umatilla National Forest, with cooperation from the Bonneville Power Administration and private landowners, has implemented measures and has further activity scheduled to control the flow of acid drainage from the mines and provide vegetative treatment of the heavy metal constituents in artificial "bogs." Preliminary results indicate significant improvement in water quality resulting from these control actions. Timber harvest, road construction, and grazing do not normally produce a loading of heavy metals or acidifying substances which would compete with the mines for a limited assimilative capacity in the stream. Consequently no further restrictions above these required for the applicable management strategies (C7, A3, C1) have been adopted.

COMMENT NO. 15: The high adverse short-term water quality degradation caused by fish habitat enhancement activities would be a clear violation of NFMA and NEPA. The FEIS should explain how the expected increase in sediment due to fish enhancement projects compares to that caused by other forest management activities.

FOREST RESPONSE:

The short-term, localized impacts on water quality associated with fish habitat enhancement work would not be a violation of NFMA All projects will be evaluated in accord with the process provided for in NEPA and its implementing regulations.

As discussed in the Water section of Chapter IV, FEIS, water quality monitoring indicates that the effects are short-term and very localized Unlike other management activities involving exposure of bare soil in a watershed, fish habitat enhancement activities generally do not cause an increase in overall sediment input to a stream system. Since fish habitat improvement activities occur directly in stream channels, sediment already in the channel is stirred up and is redistributed downstream by the water current. To preclude deleterious impacts on fisheries, stream enhancement work is performed only during summer low flow periods after spring spawning and fry emergence and before commencement of fall spawning in accord with guidelines established by the Oregon Department of Fish and Wildlife and Washington Department of Wildlife.

COMMENT NO. 16: Roading and logging watersheds will damage downstream irrigation systems and water purification systems. You should estimate the increased cost to the public if these systems are damaged or if communities have to institute filtration as a result.

FOREST RESPONSE:

Forest activities will be managed so as to meet applicable state water quality standards and maintain beneficial water uses. See Appendix E, FEIS, for a discussion of Forest water quality policy. Although no impact on downstream culinary (potable water) systems is envisioned, this situation does not absolve downstream communities from meeting water treatment requirements of the Clean Drinking Water Act and other applicable state and Federal laws

COMMENT NO. 17: A review of the scientific literature on the subject reveals that there is considerable variability in the results reported on hydrologic impacts of timber harvest. Studies are cited indicating no impact on the magnitude and timing of peak flows, short-term increases in annual water yield and increased summer flows, changes in snowmelt rate, and difficulties in modeling sediment production and sediment routing in channels. Most of the models designed to predict such responses produce extremely problematic results. It is concluded that Forest hydrologists have not been able to precisely document the effects timber harvest has on water yield and sediment production. Consequently, the FEIS should admit it is difficult to predict changes in sediment and water yields due to management activities. Timber harvest activities should not be constrained to avoid supposed adverse impacts on water yield.

How is uncertainty in predicting effects reflected in management strategies?

FOREST RESPONSE:

The revised discussion in the Water section of FEIS Chapter IV acknowledges the uncertainty involved in precisely modeling the impacts of Forest management activities on the quantity and quality of water in Forest streams. Considerable variability exists in the results reported in the scientific literature. However, some of the variability can be explained by the different hydrologic responses encountered in different hydrologic provinces. The Umatilla National Forest water management policies have been based on careful consideration of applicable research from other areas in the same hydrologic province, on the results of the Umatilla Barometer Watershed study, on adherence to state regulations on forest practices and water pollution control, on the considerable in-house experience gained in watershed management activities and on development of best management practices both on this Forest and elsewhere.

Reasonable and effective standards and guidelines and associated mitigation measures have been developed to ensure that management activities do not violate state, Federal, or Forest objectives for water quality, quantity, and timing of flow. These are found in Chapter 4 of the Forest Plan. If measures are determined by subsequent monitoring, inventory, administrative study, and local research to be ineffective or unnecessarily restrictive in meeting stated goals and standards, practices can be modified accordingly. The strategy for adaptive management described in Appendix E of the FEIS is designed to deal with the uncertainties involved in predicting hydrologic responses.

Although no restriction on timber harvest has been proposed in the Plan based specifically upon limitations on water yield, the indirect effect of timber harvest dispersion constraints and riparian management guidelines should prevent potential deleterious impacts on water yield and timing of flows.

COMMENT NO. 18: How does harvesting (clearcutting) effect local ground water tables immediately downstream below harvested watersheds?

FOREST RESPONSE:

The Umatilla has not collected data on the response of local ground water tables to clearcut harvesting However, data collected by the Forest on soil moisture levels in clearcuts and surrounding unharvested stands indicates that soil moisture is significantly increased in the clearcut stands relative to the surrounding unharvested areas throughout the growing season. The increase is due primarily to reduction in evapotranspiration rates in the clearcut stands. The Forest has no data to demonstrate whether the increase in soil moisture is large enough to be reflected in a consequent rise in ground water tables immediately downstream.

CUMULATIVE EFFECTS

COMMENT NO. 19: In order for reviewers to evaluate the cumulative effects of Forest management activities, the DEIS should have presented information on sediment, water yield, and timber harvest activities on a watershed basis.

FOREST RESPONSE:

To assist in the review, sediment outputs are presented by sub-basin for the final Plan. This information can be found in the Water section of Chapter IV of the FEIS Water yield information is not presented on a sub-basin basis since detailed data is not available for all drainages, and the potential changes in water yield attributable to Forest management activities is very small.

COMMENT NO. 20: The cumulative effects analysis of water does not adequately identify potential effects. Cumulative effects analyses must be done for sediment, temperature, grazing impacts, fisheries, riparian habitat, and downstream lands and facilities

FOREST RESPONSE:

Broad-level cumulative effects analyses have been made and documented in the Water, Fish/Riparian, and other sections of Chapter IV of the FEIS. Mitigation measures such as harvest dispersion constraints by watershed, and temperature-driven stream shading guidelines have been developed to address control of possible cumulative effects. These are documented in Plan Chapter 4, FEIS Chapter IV, and FEIS Appendices D and E. Drainage or watershed-level cumulative impact analyses require site-specific project proposals. Site-specific decisions are not usually made in a forest plan. Prior to making site-specific decisions, additional NEPA analysis, including required cumulative effects analyses, will be performed.

BAROMETER WATERSHED

COMMENT NO. 21: The Barometer Watershed is not representative of the conditions found across the national forest. The intensity of harvest and size of units are not representative of actual harvest prescriptions employed elsewhere on the Forest. Consequently, the results are not applicable elsewhere. The Forest needs to expand its Barometer Watershed study to other areas and conditions on the Forest.

FOREST RESPONSE:

Findings from the Umatilla Barometer Watershed represent the best available data on the response of forested watersheds to timber harvest activities in the Blue Mountains. Studies at the High Ridge Evaluation area of the Umatilla Barometer Watershed were designed to investigate a broad range of Forest management activities. Harvest levels and methods are representative of the majority of harvest entries proposed for the future under the Plan The study area on the Umatilla Barometer Watershed is typical of many of the higher elevation mixed conifer sites on the Forest Although results from the Barometer Watershed cannot be expected to accurately portray the exact quantitative response of all watersheds on the national forest, the study, combined with the results of similar studies conducted elsewhere in the interior Rocky Mountain province, can provide an accurate characterization of the nature of response anticipated in the northern Blue Mountain region.

Because of the high cost of the Barometer Watershed study, the Forest does not anticipate duplicating similar intense levels of monitoring elsewhere on the Forest. However, monitoring and administrative studies of the timber related impacts on timing of snowmelt, soil moisture regimes, and water quality are planned for watersheds in the drier southwest end of the Forest The Forest has also identified (in Chapter 2 of the Plan) research needs related to management strategies for delaying spring snowmelt runoff.

COMMENT NO. 22: The DEIS on page III-7 refers to water quality effects measured on the Umatilla Barometer Watershed. Have there been any conclusions on water quality effects in the watershed? What parameters are being examined?

FOREST RESPONSE:

The water quality studies conducted on the Umatilla Barometer Watershed are described in the Water section of Chapter III, FEIS. Water quality parameters have been monitored as part of this study only since 1983. An analysis of water quality data has not been completed to date. Parameters monitored include temperature, suspended sediment, bedload sediment, and turbidity.

WATER QUALITY

COMMENT NO. 23: Any Forest activity having an impact on water quality must be conducted in such a manner as to meet state water quality standards. Goal #10 should be modified to reflect the need to protect water quality and meet state standards.

FOREST RESPONSE:

The Forest management goal statement concerning water quality has been rephrased to reflect the Forest commitment to meet state water quality standards (see Chapter 4, Plan).

COMMENT NO. 24: What water quality standards is the Forest abiding by? The Forest should not use water quality regimes from the Barometer Watershed as standards for other areas of the Forest. The Forest Plan must be consistent with the Statewide Water Quality Management Plans and the Clean Water Act. Forest practices must meet state water quality standards. This requirement needs to be expanded upon in the Plan. The citation of Oregon Water Quality Standards in Chapter 4 of the Plan is erroneous.

FOREST RESPONSE:

The Forest will continue to abide by applicable state water quality standards for Oregon and Washington. The Forest-wide Standards and Guidelines in the Water section of Plan Chapter 4 and FEIS Appendix D, relating to water quality protection, have been revised to include the correct citations from the Oregon Administrative Rules and Washington Administrative Code The reader is referred to the corrected citations for a complete description of applicable state standards and regulations. A detailed explanation of the Forest water quality management policy and its relationship to state water quality regulations and the provisions of the Clean Water Act can be found in the Water section of Plan Chapter 4 and FEIS Appendix E

COMMENT NO. 25: Will the use of BMP's ensure compliance with the state's water quality standards for anti-degradation segments? Compliance with the Clean Water Act does not necessarily correlate to fish habitat conditions Increases in sediment due to roads which adversely affect the fishery could constitute a violation of the anti-degradation provision of state water quality standards.

FOREST RESPONSE:

The Clean Water Act provides the primary national direction for the protection of beneficial uses from nonpoint source pollution impacts. Implementing regulations (40 CFR 131) provide that the states (not individual Federal agencies) shall adopt water quality standards designed to protect beneficial uses and provide for nondegradation of high quality waters. Both Oregon and Washington have adopted water quality standards to meet objectives (OAR Chapter 340-41, WAC Chapters 173-201 and 202). As described in the Forest goal statements in the Plan Chapter 4, the Forest Service is committed to meeting the intent of the state standards; namely the protection of beneficial uses and high quality waters through the application of Best Management Practices (BMP's), monitoring of their effects, and if necessary, subsequent adaptation of BMP's. This process is provided for in Forest-wide Standards and Guidelines, Plan Chapter 4, and is described in more detail in FEIS Appendix E. It should be noted that if subsequent monitoring indicates that BMP's are insufficient to meet state water quality standards or to protect beneficial uses, the Forest shall revise or adopt new BMP's, and amend or revise the Plan, as necessary, to achieve these goals. The latter course of action is provided for in Chapter 5 of the Plan. Although the Forest Service has no authority to set water quality standards, per se, it can adopt BMP's or instream goals and objectives which are more stringent than required by the states.

COMMENT NO. 26. The DEIS lacks sufficient data on existing water quality to adequately assess the effects of proposed activities. An organized summary of water quality data covering the whole Forest should be presented. How did the Forest reach its conclusion that water quality was well above minimum state standards?

FOREST RESPONSE:

Several years of water quality monitoring by the Umatilla National Forest have indicated that, in most cases, ambient water quality conditions are well above minimum state standards. Exception to the general rule have been noted in the Water section of Chapter III, FEIS Most of the Forest's historical water quality monitoring results are on file and available to the public through the EPA STORET national water quality data base. The Forest does not have a comprehensive stream-by-stream summary of its historical water quality data base at this time. Because of the large amount of data collected, it will not

be possible to prepare such a summary before the issuance of the Forest Plan. The Forest hopes to have an overview of water quality conditions on monitored streams available by 1992

COMMENT NO. 27: Do the Umatilla's predictions on water quality hinge on watershed improvements?

FOREST RESPONSE:

No. Although proposed watershed restoration projects will have a positive effect on water quality in nearby streams, the primary water quality management tool across the Forest will be the implementation, monitoring, evaluation, and further development of BMP's (including area-specific BMP's documented in Forest-wide and Management Areas Standards and Guidelines and project-specific BMP's developed on a individual basis) for ongoing and future projects. This policy is described in detail in Appendix E, FEIS.

COMMENT NO. 28: We could locate no quantitative information in the DEIS as to the present or proposed levels of coliform bacteria pollution from livestock in the Forest waterways.

FOREST RESPONSE:

Little coliform data has been collected in recent years by the Forest since previous sampling indicated that coliform contamination was not a significant problem in Forest streams.

COMMENT NO. 29: The 1978 Oregon Department of Environmental Quality statewide assessment of nonpoint source problems reveals that many streams on the Forest have debris, erosion, sedimentation, or temperature problems. Why did the Forest ignore this information, and current information supplied by Department of Environmental Quality (DEQ) and the Oregon Department of Fish and Wildlife (ODFW) to make the key assumption that the Forest is presently meeting state standards?

FOREST RESPONSE:

The Forest Service considered available information on water quality of national forest streams including state agency water quality concerns. The Umatilla National Forest was a principal contributor of information to the 1978 Oregon water quality assessment on streams of the national forests. The Forest also utilized its own water quality data base in making the assessment found in Chapter III of the FEIS. This data base is available for inspection at the Forest Supervisor's office in Pendleton.

Although many streams, particularly on the southern end of the Forest, have higher than optimal temperatures in late summer, few stream reaches have documented debris, erosion, or sedimentation problems. Forest-wide Standards and Guidelines for Water and Riparian/Fish Habitat (FEIS, Appendix D) have been developed to improve stream conditions where degraded and to prevent any future degradation. The Forest will continue to work with state agencies and other interested parties in identifying water quality problem areas and working toward correction of any contributing source.

COMMENT NO. 30: In the DEIS and draft Plan, the Forest proposes to estimate tons of sediment produced as the sole indicator of the effects of timber harvest on water resources, in part because it has concluded from the barometer studies that Forest practices have little effect on water yields. The Forest focuses on one narrow component of water quality (sediment yield) and completely ignores the others. Other measures should be instituted to monitor for potential problems including ones that deal with water yield and timing. On the Umatilla National Forest, water temperature is a critical factor to be analyzed.

FOREST RESPONSE:

Sediment was selected as the primary parameter to model in the Forest planning effort, as an indicator of the relative impact of the various alternatives on water quality, and to compare how the alternatives responded to water related issues discussed in FEIS, Chapter I. Its selection and the results of the modeling effort are explained in Chapter IV of the FEIS

The Forest does not intend to rely solely on sediment monitoring as a means of assessing the impacts of Forest management activities on water and water dependent resources. Information on other important water related parameters including temperature can be found in Chapters III and IV of the FEIS. Proposed monitoring and inventory activities associated with water resources can be found in the revised monitoring plan, in Chapter 5 and Appendix A, respectively, of the Plan A very important concern, water yield, was not modeled as an indicator parameter in the Forest Plan because of the limited ability of the Forest to influence water yields relative to the naturally occurring levels.

COMMENT NO 31: The Umatilla NF did not adequately describe how the base of "background" level of sediment yield is determined After many years of logging, road building, grazing, and mining activities across the Forest, it seems that a "background" level derived from the present condition of the Forest would be much higher than a true, undisturbed background condition.

FOREST RESPONSE:

The Forest modeled the "natural" state as the best representation of "background" levels of sediment against which to compare the impacts of the various alternatives This "natural level" represents the best estimates of natural erosion and sediment transport rates for all soils of the Forest, assuming potential natural ground cover and no existing roads. Obviously the current conditions are elevated above this level. It would be inappropriate to call the existing conditions "background" since these conditions reflect not only existing cultural changes in the landscape but also the effects of previous and current levels of management activity

It should be noted that the output of the model on "background" sedimentation was checked against actual sediment data collected in the Mill Creek Municipal Watershed which is essentially unaltered by management activities and approaches a "natural" state The estimate produced by the model for this drainage was close to the actual long-term average sediment load observed in the stream.

COMMENT NO. 32 More discussion is needed on the nature of the sediment model in order to evaluate the alternatives. Otherwise we can only treat the data in the alternative as indices rather than actual yields. The sediment model should include coefficients for sediment generation in high flow events.

FOREST RESPONSE:

The discussion of the sediment model in FEIS Appendix B has been revised More detailed information on the model can be found in the process records for the Plan in the Forest Supervisor's office. The primary purpose for developing the sediment model was to provide a relative index of sediment production to compare the impacts of each of the alternatives on watershed values Sediment yield is generated on an annual basis, rather than in response to a single event or flow level. Given the broad scale of the model, it would be inappropriate to view the results as an accurate determination of actual sediment yields.

COMMENT NO. 33· Grazing-related sediment generation is not modeled A sediment model should be developed which contains coefficients for grazing.

FOREST RESPONSE:

The sediment model developed to evaluate the relative impacts of the various alternatives on sediment production did not include grazing impacts because the primary sources of cultural induced sedimentation were felt to be roads and other ground disturbance from timber harvest activities. Also, at this time, the Forest does not have the data base needed to adequately quantify and model the impact of alternative range management strategies on stream sedimentation. Although specific data is not available, sedimentation impacts of grazing are a management concern Effects of grazing on water quality, along with mitigation measures, are discussed in the Water section of FEIS, Chapter IV Forest-wide Standards and Guidelines for riparian management developed to reduce impacts are contained in Chapter 4 of the Plan.

COMMENT NO. 34: The DEIS on page IV-14 explains that road construction and timber harvesting contribute equal volumes of the sediment being produced. The opportunities for reducing road mileage for a given amount of timber harvest needs to be explained. How do road miles compare to road construction techniques in sediment yields?

FOREST RESPONSE:

Road construction techniques, road alignment, road standard, road drainage features, road maintenance, subsequent decisions on road closure, and other factors can play as great if not greater role in sediment production than actual road mileage In the NEPA analysis for a planning area transportation system, the project interdisciplinary team (IDT) attempts to develop the least cost, lowest density road system that can meet project needs and still fulfill requirements for maintenance of water quality, fisheries, wildlife habitat, and other noncommodity resource goals.

COMMENT NO. 35: What methods will be used to determine sediment yield estimates for environmental assessments for site-specific timber sales and grazing allotment plans?

FOREST RESPONSE:

The method of analysis used to estimate sediment production or onsite erosion will be determined on a project-by-project basis in the NEPA analyses. The type of analysis chosen will depend on the nature of the project and its anticipated impacts, the size and complexity of the project, and the project's potential to have deleterious impacts on water quality Existing models such as USLE, modified USLE, ONEROS, WRENNS, and locally derived models may be used based upon the analysis requirements.

COMMENT NO. 36: On page 4-33 of the draft Plan, the paragraph beginning "water quality will meet..." is misleading and needs to be rewritten. Water quality standards are essentially unrelated to average annual sediment production. Water quality standards are instantaneous in time and space and are non sequitur to annual water pollutant loads.

FOREST RESPONSE:

The statement referred to on water quality standards was not meant to relate directly to the statement following it on annual sediment production. The paragraph has been rewritten to clarify its meaning.

STANDARDS AND GUIDELINES

COMMENT NO. 37: Examination of Table 4-18 on page 4-33 of the draft Plan reveals that the Forest forecasts a slight degradation of water quality and reduction of soil productivity as potential impacts on those management areas within the moderate activity class. Management Areas C5 and C7 are included in the moderate activity class.

A few sentences later, the Forest states, "Special limitations and restrictions on activities are applicable in riparian and other areas to help ensure that water quality and quantities are being maintained or improved." This statement is totally inconsistent with the prediction that there will be a slight degradation in these areas. Moreover, it is apparent that use of MA's C5 and C7 will not accomplish the stated goals of maintaining or enhancing water quality.

FOREST RESPONSE:

The Forest acknowledges a possibility of localized, short-term impact on water quality in some Forest streams due to sediment generated by ground-disturbing activities In such cases BMP's will be designed and applied to minimize the amount of erosion and sediment reaching the stream, but it is unlikely that all culturally induced sedimentation can be prevented. Any increases in sedimentation will be kept within state water quality standards and will not be of a magnitude to harm beneficial uses of the water including fisheries. Overall water quality is expected to be maintained or enhanced. Enhancement will be due primarily to improved riparian condition resulting from implementation of

revised riparian, fish, water and range standards and guidelines in Plan Chapter 4, installation of watershed improvement and fish habitat improvement structures, and treatment of acid mine drainage.

COMMENT NO. 38: The Forest needs to upgrade its standards and guidelines to provide more protection to water resources.

FOREST RESPONSE:

Forest-wide and Management Areas Standards and Guidelines in Plan Chapter 4 and FEIS Appendix D, relating to watershed and riparian resources, have been extensively revised. They now include more specific provisions for meeting stream temperature requirements, timber harvest in riparian areas, future large woody material input to stream systems, and other areas related to water and riparian resources.

COMMENT NO. 39: The state's major concern is how sedimentation will be controlled. Most sediment control guidelines, standards, and BMP's are not specific. The state believes definitive standards must be set to ensure water quality criteria can be met.

FOREST RESPONSE:

A detailed description of sediment control guidelines can be found in FEIS, Appendix E. BMP's are described in the publication, "General Water Quality Best Management Practices" referenced in Appendix E. Specific direction for control of erosion and sedimentation is contained in the revised Forest-wide Standards and Guidelines in Plan Chapter 4 and FEIS Appendix D.

COMMENT NO. 40: The DEIS and draft Plan lack information on management controls in specific watersheds needed to assess adequately the water quality effects of proposed activities on the Forest.

FOREST RESPONSE:

Management controls for any specific watershed can be determined by reference to the management area map, associated management area direction in Plan Chapter 4 and FEIS Appendix D; mitigation measures described in FEIS Chapter IV; and the water quality policy discussion on BMP's in FEIS Appendix E.

COMMENT NO. 41: "Management activities will not deteriorate water quality below existing established water quality goals for downstream Class I and II streams; water quality changes in Class IV may involve some temperature and turbidity increases." (See Plan page 4-44.) Does this standard mean that water quality goals for Class I and II apply also to Class IV streams or does it mean that the degradation in Class IV streams will not be detected by monitoring in Class I streams?

FOREST RESPONSE:

The standard in question indicates that the less stringent measures proposed for Class IV (intermittent) streams may result in some temporary degradation of water quality on a localized basis in those streams However, where such activity might cause water quality standards to be violated or beneficial uses to be impacted in downstream perennial reaches, more stringent measures will be taken in the intermittent headwaters to control the undesirable effects. Forest water quality policy regarding maintenance of beneficial uses is described in more detail in FEIS Appendix E.

It should be noted that the Forest-wide Standards and Guidelines for riparian management of Class IV, III, II, and I streams are additive in application. In other words, only the standards and guidelines for Class IV streams apply to Class IV reaches However, both the standards listed under Class IV streams and those listed under Class III streams apply to Class III reaches; and in like manner, all of the standards listed under Class IV, Class III, and Class I and II streams apply to Class I and II reaches.

COMMENT NO. 42: Provide specific standards for protection of seeps, springs, bogs, etc. The Oregon Department of Fish and Wildlife recommends no cutting within 100 feet. Include elk wallows. (See draft Plan, p. 4-42.)

FOREST RESPONSE:

Revised Forest-wide Standards and Guidelines contain management direction emphasizing protection of the unique values of seeps, springs, and bogs in the Riparian section, and elk wallows in the Wildlife section.

COMMENT NO. 43: How can the Forest advocate reduction in canopy when the downstream cumulative effects are already at critical thresholds?

FOREST RESPONSE:

Revised Forest-wide Standards and Guidelines for stream surface shading in Chapter 4 of the Plan are designed to prevent unacceptable cumulative impacts on stream temperature in downstream reaches due to Forest management activities.

MONITORING

COMMENT NO. NO 44 : The water quality monitoring plan in the draft Plan is inadequate and does not present enough detail on the monitoring program. No site-specific information is presented on location of sampling stations. The monitoring program needs to be intensified to be able to detect adverse changes in water quality. The temperature monitoring guidelines need to be changed. The monitoring plan should indicate the mechanisms by which monitoring results are conveyed to the land manager and how frequently these communications are made. A stop action mandate should be provided for all activities adversely impacting water quality.

FOREST RESPONSE·

The water and riparian resources monitoring plan outline in Chapter 5 of the Plan has been extensively revised. Monitoring objectives include evaluation of ambient water quality, riparian area condition, implementation, and effectiveness of adopted BMP's and Forest-wide Standards and Guidelines in meeting Forest water quality objectives. The monitoring plan includes information on reporting periods and mechanisms involved in reevaluating Forest management practices based on monitoring results A detailed explanation of how monitoring of BMP's will be used to implement state water quality management plans can be found in Appendix E of the FEIS.

COMMENT NO. 45: How would an annual sample of sediment and temperature with rotating stations provide any insight into the effects of Forest projects (timber sales, allotment management). To be meaningful, sampling should be continuous and collected with proportional samples.

FOREST RESPONSE:

The monitoring plan outline in Chapter 5 of the Plan has been extensively revised. Ambient and project level monitoring for temperature or suspended sediment will generally be performed by some type of continuous monitoring or time-composited sampling. Sampling of other parameters will be performed at varying frequencies dependent upon the nature of the parameter or the activity being monitored, as provided for in the Plan.

COMMENT NO. 46: It is essential that drainage by drainage evaluations of water quality be determined for all rivers.

FOREST RESPONSE:

The Umatilla National Forest has 252 subwatersheds. Attempting to monitor all streams on the Forest would be fiscally and economically unrealistic. The Forest does intend to monitor water quality and fish habitat related parameters across a broad spectrum of watershed characteristics, stream conditions, and management activities See "Monitoring Plan" in Chapter 5 of the Plan The Forest also intends to gather watershed, riparian, and fisheries inventory data on a priority basis across the Forest which may eventually allow characterization of important conditions related to stream water quality in most if not all watersheds.

COMMENT NO. 47: Table 4-24 in the draft Plan shows water monitoring only for management strategies F2 and F3. Monitoring only those two strategies is a serious omission in the Plan. Except for two drainages, the monitoring program shows no monitoring extending from Class IV to Class I streams Because the test drainages are not specified, we are uncertain if the size of the drainage includes a Class I stream.

FOREST RESPONSE:

Table 4-24 has been revised to indicate that water monitoring is intended to be a broadly applicable activity across the Forest. Proposed monitoring will include all classes of streams Intensity of monitoring is displayed in the water monitoring plan outline in Chapter 5 of the final Plan.

COMMENT NO. 48. The Forest Plan should include a monitoring plan for water quality which is designed to track model assumptions and parameters

FOREST RESPONSE.

Water quality monitoring and inventory data will be used to verify certain model assumptions. Evaluation monitoring and special research studies will be necessary to evaluate other assumptions. This type of monitoring and research is generally beyond the scope of the Forest resources and will need to be coordinated with Forest Service research and university personnel.

COMMENT NO. 49: The proposed monitoring program does not address cumulative effects of sedimentation and temperature in the least.

FOREST RESPONSE:

The revised water quality monitoring plan in Chapter 5 of the Plan does provide for long-term ambient temperature and instream indicator monitoring (e g , macroinvertebrates, embeddedness, and percent fines) in larger streams on the Forest with which cumulative effects can be assessed. The Forest will cooperate with state water quality management agencies and other out-service groups to extend available monitoring resources over the broadest range of sites.

COORDINATION

COMMENT NO. 50: The Umatilla National Forest encompasses parts of four drainage basins, including the John Day and Umatilla rivers, and parts of the Grande Ronde and Walla Walla rivers. Water uses are restricted or limited in certain parts of each basin under basin programs adopted by the Oregon Water Resources Commission. These programs should have been referenced in your DEIS and the alternatives evaluated in relation in them.

The State Basin Program for the John Day basin contains specific recommendations for the Forest Service that are detailed in the Water Resource Department's comments. One of the major objectives discussed is better seasonal distribution of runoff in the John Day drainage to moderate high and low stream flows, especially through the protection and improvement of riparian areas You should give serious consideration to attaining this important objective in all basins within the Forest.

The Umatilla plan does not mention the possibility of multi-owner watershed planning A policy stating an intent to cooperate with watershed plans begun by the State of Washington should be provided.

FOREST RESPONSE:

The Umatilla National Forest welcomes the opportunity to cooperate with Federal, state, and local entities on basinwide planning for judicious use of water resources of the area. The state basin programs and their relationship to national forest management are discussed in the revised Water section in FEIS, Chapter III. As discussed in FIES, Chapter IV, the alternatives considered would not be in conflict with the objectives of the basin programs. However, Forest management activities provide very limited opportunity to accomplish a major resource objective of some state basin programs, which is to increase water yield during critical low flow periods This situation is discussed in detail in the Water section of FEIS, Chapter IV. Forest Plan direction is consistent with the specific recommendations of the John Day Basin Program for affected national forest lands.

COMMENT NO. 51: Your discussion of the Umatilla Basin project, on DEIS page III-7, is extremely limited The Forest land needed for it should be clearly identified in the Forest Plan.

Forest Plan page 2-21 and DEIS page III-7 include paragraphs which indicate that the Bureau of Reclamation is evaluating a proposal to construct a dam on the North Fork of Meacham Creek as a part of the Umatilla project. During 1988, project supporters will seek Congressional authorization that does not include the North Fork storage facilities. We suggest, therefore, that these two paragraphs be deleted in the final documents.

FOREST RESPONSE:

The referenced discussions of the Umatilla Basin Project and North Fork Meacham Creek storage facilities have been revised in the final Plan and FEIS, Chapter III, Water section.

COMMENT NO. 52: The Forest Service needs to address the matter of Federal reserved water rights as part of their planning process so that the states can more efficiently allocate, protect, and adjudicate the Forest water resources. Does the Forest intend to extend its rights to support flows necessary for fish during summer months? The Forest Service should consult with state and tribal agencies when water withdrawals are proposed on national forest land regarding cumulative impacts on fish and other resources.

FOREST RESPONSE.

Minimum instream flow needs are discussed in the revised Water section of FEIS, Chapter III. Forest-wide Standards and Guidelines in Chapter 4 of the Plan include a provision for quantification and protection of needed instream flows, on a case-by-case basis, as developments arise, which might adversely affect national forest resources. No Forest management activities are proposed in the Plan which would violate minimum stream flows requested in state basin programs Out-service as well as Forest Service proposals to withdraw water on the national forest are reviewed on an interdisciplinary basis through the NEPA process. Consultation with appropriate state and tribal agencies on water withdrawal proposals is provided for in Forest-wide Standards and Guidelines in Plan Chapter 4 and FEIS Appendix D.

COMMENT NO. 53: The discussion of water resources should discuss the applicability of the Fish and Wildlife Coordination Act to management activities which constitute "impoundment or diversion" of water under the Act.

FOREST RESPONSE:

The discussion (in the Water section of Chapter III, FEIS) on out-service proposals for water resource development projects refers to the requirements of the Fish and Wildlife Coordination Act as "applicable federal legislation." Forest Service policy regarding implementation of this Act is contained in FSM 2610.1--4. Management direction is now provided in the Forest-wide Standards and Guidelines for water resources (Forest Plan Chapter 4 and FEIS Appendix D) in compliance with provisions of this Act.

SOIL

COMPACTION AND EROSION

COMMENT NO. 1: The SRI indicates that about 34 percent of the soils are sensitive to compaction and 60 percent of the soils, on slopes greater than 35 percent, are subject to surface erosion (Plan, p. 3-10) Where are these soils and slopes located?

Without a better understanding of where areas susceptible to soil erosion are located throughout the Forest, it is impossible to discuss how the proposed Plan will protect the soil resource and minimize impacts on water quality from soil erosion.

FOREST RESPONSE:

The Umatilla NF Soil Resource Inventory (SRI) containing maps, mapping unit descriptions, and interpretations is the source document used to display where soils susceptible to soil compaction and surface erosion are located. These areas are scattered throughout the Forest During project planning, compaction and erosion prone areas are assessed, and proposed prevention and/or mitigation measures taken.

SEDIMENT

COMMENT NO. 2: It was difficult to evaluate the DEIS and proposed Plan and decide on an appropriate alternative because there were no maps or listings of soil erosion classes

FOREST RESPONSE:

Instead of including a number of single-purpose maps, the Forest generated and displayed estimates of sediment output for each alternative to reflect Forest-wide response to the particular alternative's set of activities.

PRODUCTIVITY

COMMENT NO. 3: Allowable soil displacement of 50 percent of the A Horizon would mean that if the A Horizon were 4 inches thick, the top 2 inches could be displaced. The standards do not indicate allowable total surface area disturbance. "Nutrient capital on forest and rangelands is to be maintained at acceptable levels" (Plan, p. 4-51). The standards for soil productivity speak of acceptable levels of nutrient depletion, but no standards for nutrients themselves are adopted. Instead, soil productivity is equated to soil compaction and surface disturbance which do not indicate nutrient capital.

FOREST RESPONSE:

Soil nutrient capital is highly variable. Results of a number of nutrient samples which are taken in a given area where soils are observed to have similar characteristics are averaged to assess net change from preactivity levels. The total amount of individual macro and micro nutrients available for plant use is an important indicator of productivity potential. Also important is the interrelationship of individual nutrients. In order for plants to respond to the total nutrient capital, all have to be available in adequate amounts. Plants are restricted in growth and productivity by the nutrient having the least relative abundance.

EFFECTS OF TIMBER HARVEST

COMMENT NO. 4· The Forest has conducted a study that indicates tractor logging has not reduced growth on lodgepole pine sale areas. The studies showed that growth was reduced on compacted areas but the lower growth was not significant when averaged with the other plots Studies do not include mixed conifer sales subject to machine piling of slash which will constitute a larger proportion of the Forest.

FOREST RESPONSE:

Several timber cutting units have been measured for changes in soil conditions following timber harvest and post-harvest activities. An attempt was made in 1980 by the Umatilla, Malheur, and Wallowa-Whitman National Forests and the Range and Wildlife Lab in La Grande to relate soil conditions to the productivity, but no conclusive results emerged.

Machine piling is no longer commonly used as a method of removing unwanted woody material. Other methods such as prescribed burning have been substituted in many areas on the Forest.

COMMENT NO. 5: The yield tables do not reflect the loss in soil productivity which has occurred and will be allowed. Slash disposal, erosion, and soil compaction are caused by timber harvesting. The volume reductions incorporated in the yield tables reflect mortality, defect, and breakage. No reductions are made for lowered site productivity. The effects of timber harvest activity on soil fertility are not adequately presented.

Displacement, compaction, burning, and puddling of soil area will be evaluated annually on an undisclosed percentage of harvested areas Indicating an allowable increase in bulk density means little unless it can be stated how this will affect future Forest productivity and unless rates of recovery can be specified. Do projections of sustained-yield capacity account for the reduction in production capability of 20 percent of the land base? If 20 percent of an activity area can be in a condition of unacceptable productivity, what does this mean in terms of future Forest productivity?

FOREST RESPONSE·

Logging has been going on in the area for about one-third of a rotation (roughly 30 years) and sufficient time has not accrued to allow for stands to be tall enough and large enough in diameter to be measured during a timber inventory. In other words, the second growth Forest stands have not matured to the point where they can be measured for managed yield growth characteristics or tested for changes to fertility and overall site productivity. To date, timber inventory plots have not been established in regenerated stands to measure the total set of natural and management effects on tree and stand productivity. Some old clearcuts, harvested in the early 1960's, may meet minimum criteria at the next inventory in the early 1990's. The new integrated resource inventory will include managed stands and will provide reliable information on the growth and yield of such stands. See Appendix A of the Forest Plan for the schedule of inventories. The new inventory information will be factored into the Forest yield tables, and adjustments will be made in the Forest Plan, if needed.

The intent of the soil standards and guidelines is to conduct activities so that first priority is to prevent soil compaction, displacement, puddling, erosion, and severe burning The second priority is to minimize detrimental changes, and the third is to mitigate altered soil conditions.

The desire in an environmental impact statement or assessment is to clearly display cause and effect relationships between proposed actions and expected outcomes. Predicting changes to productivity that result from activity-induced soil modification is incomplete at this time, in terms of both net and cumulative changes.

The question that asks for linkage between bulk density increases, future forest productivity changes, and recovery rates can only be addressed in general terms at this time.

Compaction of Forest soils is variable both in terms of intensity and extent. In activity areas, such as timber sale cutting units, highly compacted to uncompacted areas are found Also, the sizes of the affected areas vary greatly. The standards for soil productivity (Forest-wide Standards and Guidelines, Chapter 4, Plan, and Appendix D, FEIS) were included to assure that both short- and long-term productivity will be maintained. The areas where compaction occurs will be evaluated for size and magnitude of change and scheduled for appropriate mitigative measures. The standards include a maximum allowable detrimental condition of 20 percent. The Forest Plan (p. 4-51, No. 11) states the standard in opposite terms: "Maintain a minimum of 80 percent of an activity area in a condition of acceptable productivity potential."

The 80 percent minimized area standard for maintaining productivity is intended to be an end point or "worst case" value, not a target to try to reach. Total long-term forest productivity will change through time, but the magnitude and direction of the change is not measurable now. Periodic (every 10 to 15

years) timber inventories are conducted Inventory statistics from second growth stands are expected to provide managed yield table values for tree growth The yield statistics are expected to reflect site and management-induced yield changes

COMMENT NO. 6: How did the Umatilla determine that there is not a single acre on the Forest likely to sustain irreversible resource damage to soils productivity or watershed conditions? "Irreversible damage" needs to be defined in a manner that protects those resources dependent upon stable, productive soils and healthy watersheds.

FOREST RESPONSE:

Potentially, each acre of the Forest suitable for timber harvest could sustain "irreversible" resource damage A primary goal of land and resource management is to insure that irreversible damage does not occur (NFMA Sec. 6, (g), (3), (E), (i)).

COMMENT NO. 7: Presumably there is no limit to soil disturbance on smaller sales outside riparian zones The standard states, "Within 250 feet of all streams and wet areas associated with streams, limit the mineral soil exposed by ground-disturbing activities to 10 percent of the project area." That should override the virtual *carte-blanche given to soil disturbance outside riparian areas* When combining the allowable disturbance of the A Horizon with mineral soil disturbance, the total could include the majority of the riparian ground surface.

The only remaining standards that could be called on to limit sediment delivery directly from riparian areas would be the ground cover standards. If a riparian bank is considered a moderate erosion hazard (according to some undisclosed criteria), a minimum of 30 percent of the ground requires cover. What is considered "effective ground cover after cessation of any soil-disturbing activity"—duff, grass, forbs, shrubs, slash? It is questionable that standards for necessary ground cover after logging imply tree cover.

On moderate erosion hazard slopes, 70 percent of the soil surface could apparently be disturbed. Excluding ruts less than 5 feet wide from consideration as soil disturbance certainly does not limit their potential for acting as conduits for sediment transport.

FOREST RESPONSE:

The intent of the soil, water quality, and riparian area standards and guidelines is to prevent long-term detrimental effects to the resources. A second reason for specifying Best Management Practices and standards and guidelines is to ensure that mitigation measures are taken if short-term or long-term detrimental effects do occur in spite of precautionary measures The soil productivity standards are additive, not exclusive, which means that 80 percent or more of a timber sale unit or project area must be in a nondetrimental soil condition following harvest and post-harvest activities. In some areas, like major skid trails, both soil compaction and displacement may occur together Where detrimental compaction occurs without displacement (or vice versa), both areas are tallied as being in a detrimental condition and added to any other areas meeting the detrimental condition criteria

The term "effective ground cover" is used when referring to erosion hazards. The term is applied to materials and substances which either absorb or dissipate the energy of raindrop impact. All types of vegetative material in direct contact with the mineral soil surface or within a short distance above it—including duff, grass, twigs, needles, slash, etc.—are effective, as are exposed rocks.

A modified version of the Universal Soil Loss Equation (USLE) was used to predict erosion of soil particles. A separate model was used to predict sediment transport The erosion model was selected because it is supported by the USDA, Soil Conservation Service Admittedly, USLE was developed for, and best used with, agricultural soils, but modifications to several variables have been developed so that use in forested areas is considered acceptable Care was taken to specify that outputs are index values, not exact sediment numbers. The intent of the Forest-wide Standards and Guidelines is to prevent erosion and sedimentation

COMMENT NO. 8: No calculation is made of the Forest value lost to riparian zone degradation resulting from clearcutting.

FOREST RESPONSE:

The importance of riparian management was recognized early in the Forest planning process As a result, Forest-wide Standards and Guidelines and several management strategies were developed which emphasized protection of water quality, protection of riparian area vegetation, retention of shade for water temperature control, maintenance of streambanks and minimal ground disturbance, and maintenance of large woody debris.

In the Forest Plan, many riparian areas do not have scheduled timber harvest Where timber harvest is permitted, uneven-aged (selection) management is emphasized Even-aged systems including clearcutting are possible but only a minor amount is anticipated and then only within the appropriate protection requirements of the Forest-wide Standards and Guidelines and management area direction found in Chapter 4 of the Forest Plan Riparian conditions will improve under the Forest Plan.

COMMENT NO. 9: The Plan must "insure that timber will be harvested from National Forest System lands only where soil slope will not be irreversibly damaged."

FOREST RESPONSE·

As discussed in the Soils section of the FEIS, Chapter IV, the primary approach to management of soils is prevention of impact Therefore, most of the soil conditions and resultant impacts can be predicted during project planning Consequently, projects can be designed and implemented which will avoid or minimize the risk of impact and which will not irreversibly damage the soil resource Soil productivity standards and guidelines are stated in Chapter 4 of the Forest Plan and Appendix D of the FEIS.

COMMENT NO. 10: The barometer watershed does not adequately test the effects of logging on slopes and should be extended to do so. Specific procedures should be followed that pay particular attention to slopes such as high line or high lead logging that doesn't disrupt the soils.

FOREST RESPONSE:

A research study was conducted in 1978 in the Umatilla Barometer Watershed that focused on erosion and soil movement following logging activities During a 20-month period, both grass-seeded and unseeded plots showed that surface soil displacement was not consistently related to either degree of disturbance or seeding rate.

COMMENT NO. 11: The Forest should increase costs of timber sales to include all costs necessary for rehabilitation of erosion areas.

FOREST RESPONSE:

All timber sale contracts include estimates of costs associated with rehabilitation of disturbed areas, including those potentially subjected to accelerated erosion If the measures are considered inadequate following application of suitable mitigation measures in timber sale contracts, then post-harvest sale area inventory plans and/or watershed improvement plans are created to mitigate the problem.

COMMENT NO. 12: How can even-aged management (clearcutting) protect the more than 50 percent remaining identified plant communities that protect our soil from erosion?

FOREST RESPONSE:

Generally, vegetative cover consists of duff, grass, shrubs, and trees Maintaining the first three components during and following tree harvest operations prevents soil erosion. Timber sale contracts specify grass seeding of any bare soil areas created as a result of harvest activity

EFFECTS OF ROAD CONSTRUCTION

COMMENT NO. 13: "Active slump and landslide areas will generally be considered unavailable for road construction." Why would such areas be considered at all for road construction?

FOREST RESPONSE:

The scope and detail of the Plan is such that it does not include site-specific or project-specific details A guideline was included in Chapter 4 of the Forest Plan to address the issue of road construction in landslide-prone areas. The word "generally" was included to allow for an interdisciplinary team to evaluate project proposals against specific onsite conditions and risks. The landslide and other soil and bedrock mass movement features were identified and remapped onto large scale (1:24,000) U S Geological Survey geology maps and in the Umatilla Soil Resource Inventory (1978) for use by project planners.

COMMENT NO. 14: The Forest must also explain its assertion that a cumulative effect on soil from road construction is to add to the acreage of unproductive areas. No mention is made of acres lost to slumps and other disturbances to the soil that are direct results of road construction.

FOREST RESPONSE:

Areas such as work sites, utility corridors, and roads were specifically removed from consideration early in the analysis process. (See Non-Forest Land, DEIS Appendix B, p. B-8.) Acreage lost to tree production because of future road construction will not be included in new inventories because they are acres not available for producing future crops. The few areas, where slumping has occurred as a result of road construction, consist of fewer than 100 acres Forest-wide and, where not part of the road, are capable of supporting vegetation, including trees.

EFFECTS OF FIRE

COMMENT NO. 15: The Forest can also provide estimates of the tons of nitrogen lost each year due to prescribed burning.

FOREST RESPONSE:

Done properly, as in prescriptions where both surface soil and duff moisture levels are considered, prescribed burning will not "seriously reduce" soil fertility. Often the fresh and slightly-decomposed forest litter is reduced from complex organic compounds to a form easily used by existing or new plants. Most nutrients are held in the soil and recycled by plants, rather than lost.

MONITORING AND MITIGATION

COMMENT NO. 16: What methods will be used to evaluate compaction? Will this involve infiltration or bulk density measurements? How deep will cores be taken and what values will be used as standards for the soil types involved?

FOREST RESPONSE:

Compaction is the term used for describing various changes to a soil, generally from a force applied to the top surface. Compaction can be described in a variety of ways, including changes to bulk density (weight per unit volume), infiltration rates, and macropore space volume The method most commonly used on the Forest is the soil core method for measuring changes in bulk density. Sample depth and other sampling design procedures are determined by study needs.

COMMENT NO. 17: We recommend that specific criteria with threshold levels be identified for monitoring soil compaction.

FOREST RESPONSE:

The management requirement for soil compaction specifies that 80 percent or more of an activity area will be in a condition of acceptable productivity potential. In addition to the affected area criteria, two "threshold" soil bulk density values are stated A maximum 20 percent bulk density increase of volcanic ash-derived soils and 15 percent increase in other soils is a Forest standard found in Chapter 4 of the Plan; a standard is also included for minimum percent effective ground cover to prevent surface soil loss.

COMMENT NO. 18: Nowhere does the UNF adequately discuss the effectiveness of its mitigation measures on soil productivity, nor does it adequately discuss its assumption that the monitoring represents average conditions of soil productivity. Where and when was this monitoring conducted? What were the sizes of the areas monitored? How would mitigation for compaction take place and what percent of compacted soils could receive mitigation?

FOREST RESPONSE:

Mitigation is the third and least desirable method of dealing with soil damage As stated earlier, prevention is highest priority, and minimizing amount and area of compaction and other forms of soil damage is the second priority Mitigation generally results in less than a 100-percent return to preactivity conditions It is estimated that using a winged ripper tool pulled behind a tractor results in a restoration of 60 to 70 percent of preactivity condition Local studies to validate these estimates have not been accomplished at this time.

COMMENT NO. 19: The proposed Plan and DEIS do not include grass seeding of logged or disturbed areas. Seeding would help stop or control erosion from logging activities.

FOREST RESPONSE:

Ground-disturbing projects, such as logging and road building, are required to have soil erosion control plans before they are carried out. Part of every timber sale and road construction project contract contains language that includes structural (ditches and other methods) and nonstructural (grass seeding) measures to be accomplished. Timber sale and road construction projects are site-specific. Each project is evaluated separately according to anticipated environmental impacts.

ECOSYSTEMS AND DIVERSITY

DEFINITION AND CONDITION

COMMENT NO. 1: It would be helpful if a bit more background on natural diversity were presented, particularly why diversity is important and how the subject is related to forest planning issues.

FOREST RESPONSE:

The discussions in the Ecosystems and Diversity section in Chapters III and IV of the FEIS have been strengthened; items addressed include an expanded definition of diversity, species and association abundance, densities, known population changes, and disturbances and effects Additional wording has also been placed in the Forest-wide Standards and Guidelines in Appendix D of the FEIS and Chapter 4 of the Forest Plan concerning the goal statement, species used in planting harvest units, and retaining species during thinning operations

COMMENT NO. 2: The Plan on page 4-47 states that the goal of ecosystem management is to "manage the plant resources to insure a proper diversity and balance of native plant species...." The identification of what is proper diversity remains nebulous with these standards.

Goal 3 on page 4-1 should include "maintain well-distributed habitats for viable populations of all existing native and desired nonnative plant species." The Forest goal should not be limited to habitats for just vertebrate wildlife species.

FOREST RESPONSE:

The word "proper" is vague and subjective, and the definition of diversity has been expanded The goal statement for ecosystems and diversity has been rewritten, as displayed in Appendix D of the FEIS and Chapter 4 of the Forest Plan.

MANAGEMENT CONSIDERATIONS

COMMENT NO. 3: By the National Forest Management Act, forage monocultures are discouraged. The emphasis on forage as simply vegetative bulk is an antiquated idea. The Forest is directed to provide a diversity of species. It should be a goal of the Forest.

FOREST RESPONSE:

The goal statement in the Ecosystems and Diversity section of the Forest-wide Standards and Guidelines reiterates the Forest desire to manage the plant resources, in part, for a diversity of forage and tree species.

COMMENT NO. 4: On Plan pages 4-47, provide specific standards on percentages for each forested age class.

FOREST RESPONSE:

The percentages of land in specific age classes have not been specified in the draft Forest Plan The reason for this is that treatments are designed to accomplish specific resource objectives. Guided by the principles of sustained yield and multiple use, this should result in a forest with well-distributed age classes. The early and immature age classes should not be a problem in the managed forest. The old growth category is maintained by systematically spaced dedicated old growth areas, as well as other reserved areas such as wilderness, roadless areas, and research natural areas. Examples of mature age classes will be found in management areas that have long conversion periods and rotations, such as viewsheds and riparian areas, as well as areas receiving uneven-aged management treatments. A table has been added to the FEIS (refer to the Timber section of Chapter IV) that reflects the approximate area of each successional stage, over time, for the alternatives

COMMENT NO. 5: The forest should be viewed as an organism to be maintained. Features such as rots, insects, fire, and the like are natural parts of it. The Forest Service should use clearcutting only where 100 percent of the trees have died. Exotic species should not be introduced.

FOREST RESPONSE:

Modern forest management views the forest in a holistic sense, recognizing that all ecosystem components are interconnected In prescribing stand treatments, silviculturists look beyond stand boundaries to determine the context in which the stand fits in a broader, regional, ecosystem perspective. Many major ecological shifts have been caused by the management practices of the past. Managers and silviculturists look to the work of ecologists to help determine what is natural and harmonious for an area. The stands heavy with grand fir that are so prevalent on the Forest today are not, in fact, natural Low intensity wildfire maintained a completely different mix of species and stand structure; ponderosa pine, western larch, and lodgepole pine were much more prevalent The major disruptions of insects and disease create ecosystem imbalances and are not normal or natural. Silvicultural practices in the Plan are designed to lead the Forest back to a more natural and ecologically-stable condition.

A part of ecosystem maintenance is the system of reserved lands that will serve as a base against which to measure management changes. Allocations such as research natural areas, botanical areas, dedicated old growth areas, wilderness, and other areas without planned or scheduled timber harvest will form this base

Thanks to the work of researchers, Forest managers are now more aware of the importance of rot, down woody debris, and soil microflora and fauna Logging, slash treatment, and site preparation practices are currently undergoing modification to ensure long-term site productivity Concerns for diversity will likewise add to ecosystem stability and long-term productivity.

Exotic tree species are not used now, and are not expected to be used in the future; in any case, they would not be introduced without thorough analysis of their impact on the natural vegetation, threatened and endangered species, or the ecosystem as a whole. The Forest uses locally-adapted and collected tree seed for growing its reforestation species. Western white pine occurs only in very scattered locales on the Forest, but has flexible ecological adaptability, and its range may be widened by its use as a reforestation species in upper-elevation areas with root rot problems.

COMMENT NO. 6: The proposed Plan will result in unhealthy forest conditions due to the creation of monocultured tree farms. Forest practices such as clearcutting and precommercial thinning create this situation. Species such as ponderosa pine or white fir will be eliminated from the forest. The impacts of these practices on diversity have not been addressed.

FOREST RESPONSE:

Forest practices do have direct and indirect impacts on diversity. Managers recognize the need for diversity as a part of integrated pest management to help control and minimize insect and disease problems, and, in general, for the maintenance of healthy ecosystems and total Forest management Discussions and direction regarding diversity can be found in Chapter IV of the FEIS in the Timber and Insect and Disease sections; standards and guidelines regarding forest diversity can be found in the Ecosystems and Diversity section in Appendix D of the FEIS and in the Timber section in Chapter 4 of the Forest Plan. Direction has been strengthened between the draft and final in regard to the importance of vegetative diversity.

Past practices, such as selective and partial cut logging, have reduced the natural diversity and caused a major and significant switch in the composition of the Forest Removal of high-value species such as western larch and ponderosa pine, that favor full sunlight and disturbances, left less-valuable species such as grand fir and Engelmann spruce that naturally favor shady conditions. In the selectively partial-cut stands, conditions were not favorable for the pine and larch to reproduce themselves, and their occurrence declined, while grand fir, Douglas-fir, and spruce increased. Because the latter species are highly susceptible to insect and disease, the health of the Forest declined significantly. The effects of root rots, bole rots, dwarf mistletoes, budworms, and tussock moths are now very evident.

Practices in the Plan would moderate and improve on the current condition. All regeneration practices, whether even-aged or uneven-aged, strive to perpetuate the natural diversity found in the forested ecosystems. Mixes of species (rather than a single species) will be used when areas are planted When natural regeneration is desired, seedbeds will be prepared that will ensure regeneration by several species, or supplemental fill-in planting will be done to improve on the species mix While maintaining natural diversity, species composition will be steered back to more natural pre-European-man mixes, which contained more of the seral species such as ponderosa pine, western larch, and lodgepole pine These species are resistant or are not hosts for many of the insect and disease problems that now plague the Forest, and the overall health and well-being of the Forest will be improved Precommercial thinnings and other vegetative manipulations will ensure that the proper balance of species is maintained

Vegetative diversity will be enhanced by ensuring that a variety of age and size classes are added to a geographic area over time, by the mix of even- and uneven-aged harvesting practices, and by the preservation of old growth, research natural areas, botanical areas, and other special areas

COMMENT NO. 7: On Plan page 4-47 the first guideline for Ecosystems states that "early successional stages may be improved through introduced forage species to increase production...." This immediately violates the natural ecosystem concept. Forest-wide Standards and Guidelines and management area strategies should specify that any and all reseeding, vegetation enhancement, forage enhancement, and mitigation programs will use only native plant species of genotypes native to the Blue Mountains region. Returning to native species should be a goal of the Forest. Planting of exotic plants should be curtailed. Bluegrass is a nonnative plant and should not be encouraged to dominate riparian zones.

FOREST RESPONSE:

Refer to Forest-wide Standards and Guidelines, including the goal statement, in Appendix D of the FEIS and Chapter 4 of the Forest Plan. The specific guideline you refer to also states the reasons why introduced forage species may be seeded. Noxious weeds that can (and have) invaded early successional stages and disturbed sites also violate the natural ecosystem concept. The Forest has determined that use of introduced forage species is preferable to expansion of introduced noxious weed species. The use of nonnative species is made on a case-by-case basis, dependent upon management objectives for the area. For example:

1) *Kentucky bluegrass is a nonnative species that has been widely established in virtually every state of the Union. Setting a goal of eliminating Poa pratensis from National Forest System lands would be setting a goal that cannot be achieved Other bluegrass species are native to the Blue Mountains.*

2) *Planting of orchardgrass on roadways or other disturbed sites has greatly reduced noxious weed invasions and allowed revegetation of areas that previously seeded back naturally to annual forbs and grasses. Use of this species following timber harvest has speeded up the revegetation time for such sites, reduced potential soil loss from precipitation on disturbed areas, and provided increased forage for big game and domestic livestock; but it is a nonnative species.*

3) *Streambank wheatgrass has the ability to establish in rocky sites in low-precipitation zones where many native species fail Its use throughout arid portions of the West has allowed more rapid and desirable recovery of riparian zones in need of improvement, but it is a developed hybrid.*

COMMENT NO. 8: It is important that the Forest Service document the impacts of commercial plant and fungus collecting on the Forest and propose guidelines for regulating this activity Commercial collection of native plants and their seeds and parts is rapidly becoming a matter of resource concern on the Umatilla National Forest.

FOREST RESPONSE.

Forest-wide Standards and Guidelines for threatened, endangered, and sensitive plants require that collections of these species be made only under permit The permit is issued only if population numbers are high enough to warrant the loss of one or more individuals The impacts of the mushroom industry on the Forest were realized with the 1987 influx of hunters/collectors following the 1986 fire season

Guidelines stated in the Forest Service manual address this concern. Collection permits were required beginning in 1988. The industry has proved to be short-lived in other parts of the Nation as the mushroom populations decline very rapidly just a few years after the fires that so dramatically increased their numbers.

SPECIAL AREAS OF CONCERN

COMMENT NO. 9: Fragile plant habitats such as bogs, wet meadows, talus and cliff slopes, marshes, seeps, and springs should receive specific management protection across the range of land-use prescriptions.

FOREST RESPONSE:

Forest-wide Standards and Guidelines for management of the areas you mention are found in the Riparian/Fish Habitat, Timber, and Wildlife sections in Appendix D of the FEIS and Chapter 4 of the Forest Plan.

COMMENT NO. 10: All significant stands of hardwoods should be preserved uncut and should not be "converted" to conifer stands.

FOREST RESPONSE:

Wording to this effect has been added to the Timber section (Silvicultural Prescriptions subsection) of the Forest-wide Standards and Guidelines found in Appendix D of the FEIS and Chapter 4 of the Forest Plan.

COMMENT NO. 11: Aspen and other hardwood trees are important habitat for deer, birds, and other small animals. The Plan should place more emphasis on providing a wider range of habitats.

FOREST RESPONSE:

The discussion of vegetative diversity included in Chapters III and IV of the FEIS have been revised and strengthened. The Forest-wide Standards and Guidelines included in Appendix D have also been revised to include some additional and more specific direction regarding the maintenance of habitat and vegetative diversity. During the implementation of the Forest Plan, habitat improvement projects will be initiated and will include projects that promote vegetation diversity, including the planting or regeneration of quaking aspen and willows.

COMMENT NO. 12: Because of domestic grazing, aspen will not regenerate without planting and protection.

FOREST RESPONSE:

Livestock grazing, if not properly managed, can reduce aspen reproduction and rejuvenation by preventing young trees from growing above the reach of grazing animals. Studies throughout the Rocky Mountains have found that grazing use by elk on young aspen shoots is often more damaging than that by livestock. The most effective method of encouraging aspen regeneration (because they grow in "clones") is cutting most or all of the existing stand. As many as 3,000 shoots per acre will regrow from a felled aspen stand where only 80-100 trees per acre stood before However, because of the small size of the individual stands characteristic of the Blue Mountains, project areas would probably have to be fenced to exclude use by both livestock and big game in order to guarantee the aspen reproduction success.

COMMENT NO. 13: In combination with enhancing types of cover, the Forest should consider seeding and fertilizing in order to create more desirable forage, thus holding elk on the Forest that would otherwise forage on private land.

FOREST RESPONSE:

Both seeding and fertilizing (as well as other types of management efforts) are listed in the Wildlife and Big Game section of Chapter IV of the FEIS.

INVENTORY AND MONITORING

COMMENT NO. 14: The Forest should indicate what specific mitigation measures will be taken to assure that unique ecosystems are protected from cumulative degradation.

FOREST RESPONSE:

That discussion is found in Chapter IV of the FEIS and has been strengthened (Ecosystems and Diversity section) Mitigation measures include project-specific analysis, sensitive species surveys prior to project implementation, possible avoidance of areas with confirmed populations, preparation of species management guides, and creation of special areas to protect plant populations

COMMENT NO. 15: The Forest has not been adequately inventoried as to the full range of native plant communities present on the Forest A comprehensive program should be instituted to complete the census.

FOREST RESPONSE·

F. C. Hall's extensive inventories and ecological studies of the vegetation of the Blue Mountains, "Plant Communities of the Blue Mountains in eastern Oregon and southeastern Washington," was published in 1973. A summary of his vegetation classification is found in the Ecosystem/Vegetation section of Chapter III of the FEIS. Since the late 1970's, the Forest area ecologist and his staff have continued to conduct studies of plant succession and site potential; they are in the process of updating Hall's work on the Umatilla National Forest Refer to the Threatened/Endangered/Sensitive Species section of the responses for additional information on Forest inventories.

COMMENT NO. 16: How will plant communities on the Forest be mapped?

FOREST RESPONSE.

They are mapped and included in the Forest data base For a detailed listing of the plant communities of the Umatilla National Forest, refer to Hall's document mentioned in the preceding response.

RESEARCH NATURAL AREAS

SELECTION OF AREAS

COMMENT NO. 1: The selection and establishment of RNA's within the national forest system is an ongoing process. This should be reflected in the goal statement.

FOREST RESPONSE:

The concept has been included in the goal statement

COMMENT NO. 2: The discussion of Lost Meadows and Moore Flat refers to them as not recommended for, but not removed from, consideration. The Plan provides no explanation as to why this course of action is taken, or what type of protection and special management they will receive until a decision is made.

FOREST RESPONSE:

These two areas are potential RNA's that are still viable for reconsideration and recommendation if the other candidate recommended to fill the element(s) is not accepted and established.

The two areas are located within existing wildernesses—Lost Meadow is in the Greenhorn Unit of the North Fork John Day Wilderness, and Moore Flat is in the Wenaha-Tucannon Wilderness The management that has made it possible for these two areas to be considered for RNA status will be continued.

COMMENT NO. 3: The DEIS should also state that each RNA will have an establishment record that includes a site-specific management prescription

FOREST RESPONSE:

The statement has been included under Research Natural Areas in Chapter III of the FEIS

DOCUMENT CONTENT

COMMENT NO. 4: In Appendix H, page H-1, use the title "Research Natural Area Needs in the Pacific Northwest," instead of "Yellow Book" (under Cell Needs)

COMMENT NO. 5: On page H-4, the Oregon Natural Heritage Plan and the Washington Natural Heritage Plan should be identified as the accepted updates of "Research Natural Area Needs in the Pacific Northwest "

COMMENT NO. 6: Under Implications for Research, "Research Natural Areas in Washington and Oregon: Past and Current Research and Related Literature" should be used as the most recent reference.

COMMENT NO. 7: Map 9 for Lost Meadow on page H-21 incorrectly shows the location as Range 33 1/2 East. It should be Range 34 East.

COMMENT NO. 8: On page iii of the Table of Contents, the name of the management area should be included following the code number.

COMMENT NO. 9: On page 4-6 of the Plan, RNA's should be discussed as a separate issue identified in bold in the left margin.

FOREST RESPONSE.

The changes and corrections have been made in FEIS Appendix H and Forest Plan Chapter 4

COMMENT NO. 10. Why is Table H-1 limited to animals? Plants should also be included. Also, there are four aquatic cells filled in existing RNA's for the province.

FOREST RESPONSE:

Table H-1 does include plants, but the wording was unclear The first two columns, Terrestrial and Aquatic, refer to plant elements. The four aquatic cells filled have been added, and the table has been updated and clarified.

COMMENT NO. 11: On page H-4, the listing of cell numbers under Potential to Fulfill Area Needs is confusing

FOREST RESPONSE:

Using the Pataha Bunchgrass RNA as an example, we have the code 1-29 (0) where 1=the number of elements (cells) filled, 29=the identification number of the element filled (DEIS Table H-4), and (0) means the only representative.

In other words, the Pataha Bunchgrass RNA was established to represent only the bluebunch wheatgrass/Sandberg's bluegrass (29) element. This RNA is the only representative (0) of this element in the Ochoco, Blue, and Wallowa Mountains Province

COMMENT NO. 12: What do the numbers in the cell columns of Table H-5 refer to?

FOREST RESPONSE:

As stated in Table H-5, footnote 6, this is the priority of the RNA within the Ochoco, Blue, and Wallowa Mountains Province to represent the element (cell) identified by number in the column heading. The number 0 indicates it is the only representative, 1=the best representative, 2=the second best candidate, and so forth.

COMMENT NO. 13. What are the values of the digits in Table H-9 under Sites?

FOREST RESPONSE·

These digits represent the number of sites to be found within the RNA. The first digit represents the number of unverified cultural sites, the second digit represents the number of administrative sites, and the third digit represents the number of T&E species sites (See DEIS Table H-9, footnote 3.)

COMMENT NO. 14: In Plan Chapter 4, under Forest Management Objectives, RNA's should not be included in the Special Areas discussion under Recreation on page 4-18. Scientific and educational use of RNA's requires approval and is not related to recreational use. RNA's should be a distinct discussion and not included as a subheading within the Range section on page 4-24.

FOREST RESPONSE.

Reference to RNA's has been removed from the paragraph under Recreation. The RNA discussion has been highlighted and moved. It now follows the Threatened, Endangered, and Sensitive Plant and Animal Species section.

COMMENT NO. 15: The DEIS makes little attempt to assess the cumulative effects of the alternatives on the RNA's.

FOREST RESPONSE:

All of the Research Natural Areas recommended to the Forest by the area ecologist are recommended for establishment in all alternatives of the Forest Plan. Chapter IV of the FEIS documents the environmental consequences of the alternatives on RNA potential; cumulative effects of the alternatives are unknown. Management area strategies identified in Appendix D for RNA's reflect Forest Service policy concerning management restrictions. Policy statements on many facets of RNA management are cited in Appendix H.

MANAGEMENT ACTIVITIES

COMMENT NO. 16: The goal statement is poorly expressed and should read "Preservation of naturally occurring physical and biological units where natural conditions and processes are maintained insofar as possible for the purposes of (1) comparison with those lands influenced by man, (2) provision of educational and research areas for ecological and environmental studies, and (3) preservation of gene pools for typical and rare and endangered plants and animals."

COMMENT NO. 17: Recreational activities that cause any amount of resource degradation are not appropriate in RNA's; OHV (ORV) use, camping, and open fires should be specifically prohibited to prevent vegetative destruction Construction of additional permanent trails in RNA's should be prohibited.

COMMENT NO 18: The statement that RNA's in wilderness will be managed as wilderness should be changed to read: "If an RNA is established within wilderness, management direction for wilderness takes precedence."

COMMENT NO. 19: Under Range the wording should be more specific according to the Forest Service Manual (FSM). "Prohibit grazing of domestic livestock within the RNA unless it is essential to maintain a specific vegetation type." Rather than state that "livestock grazing is restricted," the Plan should state that "livestock grazing is prohibited."

COMMENT NO. 20: The description of Management Area D2, Research Natural Area, on page II-71 is misleading. It would be more clear to state, "Management activities, including timber harvest, are generally prohibited. Management practices other than those permitted by the site-specific management prescription (part of the establishment record) must be approved by the Station Director with concurrence of the Forest Supervisor."

FOREST RESPONSE.

The documents have been changed to reflect your comments.

COMMENT NO. 21: The third paragraph (DEIS II-68) states that all management areas provide many forms of recreation This is not true for Research Natural Areas. Recreational activities are prohibited if they threaten RNA values and, as they are incompatible with maintaining unaltered conditions, should be discouraged. On II-96 to II-99 there is a strong and misleading implication that RNA's are available for recreational use. The last paragraph on page II-97 states, "Special area management contributes to the diversity of recreational opportunities." It then includes RNA's in the text and Table II-9 as examples of special areas, presumably available for recreation. Research Natural Areas should be removed from this section. In the forest management objectives, RNA's should not be included in the special areas discussion under recreation (p. 4-18). Scientific and educational use of RNA's requires approval and is not related to recreational use.

FOREST RESPONSE:

The text (DEIS p. II-68, -97, -98; PLAN 4-18) was changed to clarify that RNA's are not necessarily recreation areas. It should be kept in mind, however, that some forms of recreation are compatible in RNA's For instance, an existing trail can be utilized for hikers, if the use is not damaging; and viewing of the area from outside is a form of recreation. Hunting is normally acceptable in RNA's During the analysis process, the interdisciplinary team determined that recreation would not be a significant effect on RNA's and did not document the effects in detail. RNA's are also discussed as a separate section of the documents (e g , Chapter 4 of the Forest Plan and Appendix D of the FEIS).

Management Area D2 (Appendix D) includes the following management statements:

1 *All recreational OHV use will be prohibited Existing trails will remain open as long as the RNA objectives are not compromised.*

2. *Recreational activities and uses, including overnight camping, are discouraged*

COMMENT NO. 22: Clear guidelines should be provided for fencing areas to prevent resource degradation.

FOREST RESPONSE:

A statement covering fencing is provided under the Range subsection which expresses the language in FSM 4063.3(7).

COMMENT NO. 23: Any type of timber salvage or "vegetative manipulation," as well as scheduled or programed harvest, should be prohibited in RNA's.

FOREST RESPONSE:

These activities are prohibited, as stated in Appendix H, with the statement, "Timber management use and practices are excluded "

COMMENT NO. 24: Under Minerals, the statements are not consistent with Appendix H. The FSM states that the Regional Forester "shall ask" the BLM for withdrawal from mineral entry

FOREST RESPONSE:

Appendix H has been revised to conform to FSM 4063.35 which states that "the Regional Forester may ask the Bureau of Land Management to withdraw a research natural area from mineral entry after its establishment "

COMMENT NO. 25: Under no circumstances should the broadcast use of herbicides or pesticides be allowed in RNA's Biological and hand application should be the only permitted techniques of pest and noxious weed control.

FOREST RESPONSE:

Normally, control actions (of any type) would not be used in RNA's unless the natural processes are seriously threatened. Where treatments are used, they will support and promote the objective of RNA's. If used, biological methods are preferred.

COMMENT NO. 26· On page H-8, under Protection, fires originating within an RNA are allowed to burn only if they fit into a specific management prescription for the RNA.

FOREST RESPONSE:

Resource protection wording has been updated to reflect direction in the Forest Service manual (FSM 4063 32).

COMMENT NO. 27: Aquatic systems in RNA's should be specifically excluded from any introduction or stocking of fish or other nonnative species

FOREST RESPONSE.

Wording to cover the introduction of exotic species of plants or animals, which expresses the language in FSM 4063 3(1), has been included.

ADJACENT USES

COMMENT NO. 28: The prescription is seriously lacking in specifics as to the monitoring and control/mitigation of potential "spill over" resource degradation on RNA's caused by activities on adjacent management areas. We are particularly concerned about ORV and livestock abuse in this regard and would like to see specific information on how such abuses of RNA's will be prevented.

FOREST RESPONSE:

Where special orders are needed to limit, restrict, or control specific activities, such as camping, seasons of use, or other uses that are not compatible with the objectives of the Research Natural Area, the Forest Supervisor shall issue orders pursuant to 36 CFR 261, subpart B, to protect an area's features (Forest Service Manual (FSM) 4063 3(6)).

COMMENT NO. 29: There should be some recognition that timber activities adjacent to RNA boundaries can affect natural processes within boundaries.

FOREST RESPONSE:

This recognition is the basis for the requirement that RNA's must be large enough to provide essentially unmodified conditions within their interiors. Three hundred acres of land is generally considered the minimum size (FSM 4063.1)

COMMENT NO. 30: The boundaries of the proposed Elk Flats Meadow, Pataha, and Forks of Tamarack RNA's should be expanded to include the entire core areas and buffers of adjacent lands.

FOREST RESPONSE:

Even though each of the three areas is under 100 acres in size, each area does include a core area and a buffer of adjacent land.

INVENTORY AND MONITORING

COMMENT NO. 31: Research Natural Areas should be identified in the Information, Inventory, and Research Needs section in Chapter 2 with the need to inventory for acceptable sites to fill unfilled cell needs.

FOREST RESPONSE:

The addition has been made.

COMMENT NO. 32: The Forest should initiate an adequate inventory of native plants and continue to set aside appropriate areas for RNA and botanical areas status.

FOREST RESPONSE:

Karl Urban, instructor of botany and microbiology at Blue Mountain Community College in Pendleton, has been conducting sensitive plant surveys on the Forest since 1978 The goal is to survey 50,000 acres per year until all the Forest has been reviewed These surveys precede project activities and substantiate earlier reported sightings With few exceptions, wilderness areas will be surveyed last

Representatives of various Federal agencies, the Nature Conservancy, and the States of Oregon and Washington form the Pacific Northwest Research Natural Area Committee which in 1975 produced "Research Natural Area Needs in the Pacific Northwest " Information on element (cell) needs is updated every other year (Oregon in even years and Washington in odd years) through the state Natural Heritage Plans.

The state plans have received localized information on the Ochoco, Blue, and Wallowa Mountains Province from Forest Service Area Ecologist Dr. Charles Johnson The information has caused the modification of some elements previously identified, as well as the identification of some additional elements, and has recently led to the recommendation of about nine new RNA areas in the province (see Appendix H of the FEIS)

The revised list of RNA element needs for this province produced by the state Natural Heritage Plans is being used as the base document for the RNA needs for the national forests in the province. The list recognizes 80 elements for the province and is also included in Appendix H

Additional information will be available in mid-1990 from the update of "Plant Communities of the Blue Mountains in Eastern Oregon and Southeastern Washington" (Hall 1973). Additional RNA proposals will probably be generated by this work.

COMMENT NO. 33: Several new riparian areas should be included in Management Strategy D2 (Research Natural Areas) to serve as key baseline data for riparian zones.

FOREST RESPONSE:

RNA candidates are recommended for specific scientific needs or purposes determined by specialist in that field and not necessarily for "benchmarks" or "baselines" for management practices. Appendix H of the FEIS identifies the procedure the Forest Service uses to establish Research Natural Areas. The Forest Service ecologist for the Blue Mountain Province makes his RNA recommendations to the Forest based upon his field research, and with recognition of the Natural Heritage Data Base programs of the States of Washington and Oregon All of the current RNA recommendations made to the Forest are established under the Forest Plan.

COMMENT NO. 34: The Forest is required to inventory and evaluate potential sites for all unfilled cells [elements] that might be located on the Forest. Much more remains to be done.

FOREST RESPONSE:

The Forest Plan reflects the need to establish Research Natural Areas in the Ochoco, Blue, and Wallowa Mountains Physiographic Province which will protect those terrestrial and aquatic elements defined by the Natural Heritage Data Base programs of Washington and Oregon (see Appendix H of the FEIS). Forest Service area ecologist Dr. Charles Johnson indicates that only five of the current unfilled elements can realistically be located on the Forest.

COMMENT NO. 35: A glaring omission in the draft Plan is the lack of any monitoring plan for existing or proposed RNA's. The Plan should specifically include monitoring of the Forest's Research Natural Area program management and goals

FOREST RESPONSE:

Research Natural Areas have been added to the Monitoring Plan in Chapter 5 of the Forest Plan.

TIMBER

TIMBER MANAGEMENT

SUSTAINED YIELD

COMMENT NO. 1: Please explain the concept of sustained yield and the purpose of this policy in relation to future timber supplies from the national forest.

FOREST RESPONSE.

Sustained yield is a fundamental concept of scientific forest management and generally refers to maintaining a regular planned output and the long-term productivity of the Forest The national forests have been managed according to this principle since their creation. The Organic Administration Act of 1897 authorized the establishment of national forests in part "to furnish a continuous supply of timber for the use and necessities of citizens of the United States." The Multiple-Use Sustained-Yield Act of 1960 defined sustained yield as "the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the national forests without impairment of the productivity of the land "

In Forest planning, a base sale schedule is calculated for each alternative that reflects a constant or increasing level of planned timber sale offerings from one decade to the next Departures from the base sale schedule must be designed so they do not decrease the long-term sustained-yield capacity of the Forest The selected alternative may have an output level lower than the current level and still comply with the sustained-yield principle, as long as the planned sale schedule assures the achievement of the long-term sustained-yield capacity calculated for that alternative.

COMMENT NO. 2: What is nondeclining flow, and how is this policy implemented? Will all the timber be harvested within the next 50 years?

FOREST RESPONSE:

Nondeclining flow refers to the forestry principle which states that the base timber sale schedule in a Forest Plan alternative should be formulated on the basis that the quantity of timber planned for sale and harvest, for any future decade, is equal to or greater than the planned sale and harvest for the preceding decade; and that this planned sale and harvest for any decade is not greater than the long-term sustained-yield capacity. Exceptions to this principle are permitted where it is reasonable to expect that overall multiple-use objectives would be better attained by a departure from nondeclining flow Conditions which could trigger an evaluation of a departure alternative include the following:

1. *None of the other alternatives considered provides a sale schedule that achieves the assigned goals of the RPA Program.*

2 *High mortality losses from any cause can be significantly reduced or prevented, or forest age class distribution can be improved, thereby facilitating future sustained-yield management.*

3. *Implementation of the corresponding base sale schedule would cause a substantial adverse impact on a community in the Forest vicinity*

While much of the currently merchantable timber on available and scheduled lands will be harvested within the next 50 years, under the principle of sustained-yield and nondeclining flow, the amount harvested will remain similar to the current level and, in fact, will increase as more productive, faster-growing juvenile stands mature

COMMENT NO 3: The level of harvest in the Plan will overcut the Forest and is not sustainable. Its only purpose is to keep local timber industries operating in the short term In particular, the level of ponderosa pine harvesting is, and has been, beyond that which is sustainable. Long-term sustained levels are based on conjecture since no one has ever managed one, much less several, intensive 90-year rotations in the Blue

Mountains. Further, such levels are based on intensive timber management practices for which there is no guarantee of long-term funding

FOREST RESPONSE:

Long-term sustained-yield (LTSY) is the highest uniform wood yield from lands being managed for timber production that can be sustained under a specific management intensity and be consistent with multiple-use resource objectives for the area. The concept reflects the number of acres suitable for timber production, the intensity of management on those acres, and the growth being achieved. The LTSY for the Forest on a maximum biological potential basis, where the objective is for timber production before all other resource objectives (except those required by law), is 56 4 million cubic feet (MMCF) per year, or about 316 million board feet (MMBF) per year (BMI) For the preferred alternative in the FEIS, the level was 32.8 MMCF, or about 184 MMBF per year. This will not be achieved until about the 10th decade of the Plan. Biologically, the Forest has the capacity to produce much more wood than is being proposed for harvest High concerns for and management of other multiple-use values and resources cause the reduction.

The LTSY is predicated upon certain intensive forest management practices such as planting, genetics, and thinning Should these not be accomplished, due to lack of funding or any other reason, the state of the forest will reflect the shortcoming and force a new calculation of LTSY For instance, inventories will reflect poorly-stocked or poorly-growing acres that don't match the desired conditions calculated in the Plan. Under this circumstance, future updates to the Plan will modify the LTSY downward Likewise, if assumptions on the growth potential are underestimated in this Plan, future plans may increase the LTSY So, the present and future planning processes will adjust and take into account assumptions and conjectures regarding management practices and funding levels that influence LTSY. Refer to Chapter 5 of the Plan for the monitoring/review/amendment/revision process

The LTSY is calculated for a forest as a whole, and not for any one species, such as ponderosa pine. Given the current inventory of ponderosa pine and knowledge about past selective cutting practices, one can safely say that the level of pine harvest currently being accomplished on the Forest cannot be sustained into the future. However, given the proposed management practices that will increase the occurrence of seral species such as pine, the long-term harvest levels of ponderosa pine should be *greater than experienced today*

For further information, discussions of sustained-yield can be found in the Timber section of Chapter II of the FEIS, Chapter 4 of the Plan, and in the discussions on benchmark run analysis in Appendix B of the FEIS

COMMENT NO. 4: It is illegal and against the Multiple-Use Sustained-Yield Act not to cut at the sustained-yield level

FOREST RESPONSE:

The Act does not require the Forest to harvest at the maximum level possible, but rather at a sustainable level that is consistent with multiple-use resource objectives.

COMMENT NO. 5. The comparison in the DEIS Summary introduces biases depending on interests of the reviewer (timber, amenities, etc.) The breakline should be indicated where sustained yield limits capacity to continue in perpetuity

FOREST RESPONSE:

On a scale of possible management directions the Forest could take, at one end is the option to produce a great deal of commodity outputs and at the other end is the option to produce a great deal of amenity outputs. The referenced text is meant only to summarize how the alternatives differ by groups in commodity and amenity outputs, which is a function of the objectives of each alternative The reviewer is directed to the tables of outputs where an individual evaluation can be made

The summary has been revised to indicate that the first decade allowable sale quantity for all the alternatives is less than the long-term sustained-yield. The one exception is Alternative F/D (in the Draft

EIS), which departs from the policy of nondeclining flow, as stated in the alternative description In other words, sustained-yield limits capacity to continue first-decade timber harvest in perpetuity only for Alternative F/D. The FEIS does not display a departure alternative in detail.

LAND SUITABILITY/ANALYSIS

COMMENT NO 6: Are there really so few sites (steep south aspects) that would require special measures for regeneration?

FOREST RESPONSE:

Essentially, four screens were used to "sift out" lands that were deemed unsuitable for timber production from the land base of the Forest Two that seem pertinent to the question are:

1. *Land that is not forest land; that is, land with less than 10 percent historic or current tree cover.*

2. *Land for which there is no reasonable assurance of adequate restocking capability as prescribed in the National Forest Management Act of 1976.*

Lands such as steep south slopes may have been eliminated as being nonforest lands, or were lacking assurance of stockability without special measures like irrigation or import of topsoil. An interdisciplinary team of specialists developed characteristics related to the assurance standard based on characteristics found in the Soil Resource Inventory and plant community guides. For further information, see Appendices B and J of the FEIS. A "Stage I Analysis" on land suitability is part of the planning process records.

COMMENT NO. 7: The 17,529 acres withdrawn because of reforestation difficulties should be reevaluated, using only the Regional standard for assurance of 75 percent success in 5 years, and should not consider the Forest criteria of slope, aspect, rooting depth, stoniness, elevation, precipitation, competition, and cold soils.

FOREST RESPONSE:

The Forest and region developed support guides and criteria to assist in the determination of suitability for regeneration assurance They were physically measurable traits that were directly tied to the probability of regeneration success and were used to supplement actual experienced successes and failures in the screening process. The process used on the Forest was approved by the Regional Office, and was widely used in the region. For further information on the process, see Appendices B and J of the FEIS

COMMENT NO. 8: Forest inventory plots within wilderness and nonsuitable lands should be excluded from potential yield calculations.

FOREST RESPONSE:

At the time the stand mapping for the inventory was accomplished in 1979, the only wilderness on the Forest was the Wenaha-Tucannon Inventory plots were excluded from this area and spread across the remainder of the Forest, except in noncapable areas When the North Fork Umatilla and North Fork John Day Wildernesses were formed in 1984, an analysis was conducted to determine whether the plots *inside the new wildernesses were significantly different from plots on the remainder of the Forest, or if all plots be left in the data base. The analysis showed no significant difference between wilderness and nonwilderness plots and, since removing them would require new inventory and statistics, all plots have been left in the inventory base*

Also at the time of the inventory mapping, the concept of suitability was not yet completely formulated. The concept used was capability which was defined as forested lands capable of producing in excess of 20 cubic feet per acre per year growth Lands were screened through a photo interpretative process with field measurements and a verification process Lands that were not capable were excluded from

having inventory plots. Suitability standards were established after the inventory process was completed. Many of the nonsuitable lands are also noncapable; however, some plots may fall on nonsuitable land The effect of this should not be great, however, as inventory mapping captured the current situation and grouped similar-appearing areas, which is at least partially independent of their reforestability. The design of the next inventory will build on the information we now have regarding suitability.

Process documents on file at the Umatilla NF Supervisor's Office contain further information on this subject.

COMMENT NO 9: Differences in suitable acres between a "no change" alternative and the DEIS Alternative **A**, the Current Direction or no action alternative, provide important comparisons that were not available in your DEIS.

FOREST RESPONSE:

*The comment refers to a "no change" alternative which would reflect an existing situation which is different from the Forest Alternative **A**, the "no action" alternative required by NEPA The objective of a "no change" alternative is to maintain timber outputs at the level of the current Timber Management (TM) Plan and, to the extent possible, produce current levels and mixes of other resource outputs The intention is to display the alternative when existing timber outputs expressed in the TM plan are higher than any projected EIS alternative. This is not the case for the Forest In fact, the Umatilla had several alternatives that produced more timber than the current TM Plan level of 147 8 MMBF/year See Chapter II of the FEIS for a discussion of alternatives that were considered but were eliminated from detailed study. Comparisons of differences in outputs and effects between the existing condition and the various alternatives can be made by referring to Tables II-6 (A, B, C), II-8, and II-22*

COMMENT NO. 10: Section 6(k) of NFMA directs that the forests identify lands not suited for timber production due to economics. The DEIS states on page I-13 that economic tests are part of suitability analysis, but no critical evaluation was made to determine lands not economical to manage How were these lands identified?

FOREST RESPONSE:

Section 6(k) of NFMA (National Forest Management Act) does direct that economics be one of the factors considered when determining the suitability of land for timber production. Regulation 36 CFR 219.14 (formerly 219 12b) outlines a process by which lands are to be identified as not suited for timber production This is the process which the Forest followed.

The first stage (called Stage I) of the suitability analysis process is outlined in paragraph (a) of 36 CFR 219.14. In this stage, lands which are clearly unsuitable are identified and withdrawn from further analysis This process was conducted on the Umatilla and is displayed in Appendix J of the FEIS; the results are contained in Table 4-10 in Chapter 4 of the Forest Plan.

Paragraph (b) of 36 CFR 219 14 states that lands other than those identified as not suited in paragraph (a) "shall be further reviewed and assessed prior to formulation of alternatives to determine the costs and benefits for a range of management intensities for timber production." Paragraph (b) then goes on to outline the process by which this is to be accomplished FSH (Forest Service Handbook) 2409.13 further defines this process, which was followed in the development of the Forest Plan and is displayed in Appendix B of the FEIS. There are references throughout the Appendix to the economic considerations made at various points of the analysis process. Section IV of the appendix specifically addresses the economic efficiency analysis

Precisely which lands are economically efficient or inefficient depends on numerous factors, such as local economies, other resource management constraints, regional supply and demand, etc. In the Forest analysis process, economics of lands chosen for timber production were further examined for economic efficiency at several stages First, the present net value (PNV) of each of the 10-15 prescriptions were examined, and only those with the highest PNV's were retained For instance, prescriptions calling for intensive management of lodgepole pine on steep slopes, which would have inherently low PNV's, would be rejected From this analysis, the five prescriptions with the highest PNV's

for each particular land type and timber condition class were selected to model in FORPLAN. An additional prescription was included that allowed lands to receive no treatment, meaning they could be deemed economically inefficient by FORPLAN. FORPLAN would then choose among these prescriptions to maximize PNV for a given alternative Precisely what FORPLAN chose for prescriptions depended on the alternative. The Forest analyzed the prescriptions FORPLAN did select for the preferred alternative, and discussed these results in FEIS Appendix B

Paragraph (c) of 36 CFR 219.14 calls for lands to be tentatively identified as not appropriate for timber production to meet objectives of the alternative being considered. One of the criteria used at this stage is: "the lands are not cost efficient, over the planning horizon, in meeting Forest objectives, which include timber production."

This stage was completed during the development of alternatives, using all the economic considerations developed in Stage II as described above. The FORPLAN model made it difficult to separate the lands which were identified as inappropriate, due to economics, from those identified as inappropriate for other reasons contained in paragraph (c) In Forest Plan, Chapter 4, Table 4-10, all lands identified as inappropriate pursuant to paragraph (c) are classed as "Forest land not allocated for timber production" and include those not allocated for economic reasons.

COMMENT NO. 11: Unsuitable lands are included in the base to meet harvest goals. The increase in suitable acres from the TM Plan indicates low productivity land is being proposed for management (over 20 cf/ac is low). The Forest must reexamine this decision

FOREST RESPONSE:

The number of acres found to be tentatively suitable for timber production in the Forest planning process is lower than the number of suitable acres (commercial forest land) identified in the 1963 Timber Management (TM) Plan. See FEIS Chapter III, Timber, for a summary discussion of changes The determination of tentatively suitable acres is only the first stage in the suitability analysis for the Forest Plan Further determination of suitability is made during the formulation of alternatives. Therefore, the total number of suitable acres in the Forest Plan is even less than both the acres available in the old TM Plan and the maximum in the Forest planning process. The results are displayed in Tables II-6 and II-21, Chapter II of the FEIS.

Low productivity lands are not automatically rejected for timber production as they were under the existing TM Plan Instead, they are considered during the analysis process, in the context of their suitability to meet multiple-use objectives, and taking economic factors into consideration. As a result of the analysis, many of these lands are allocated for nontimber uses

In the Stage 1 analysis, 42,449 acres were determined to be unsuitable; these acres were withdrawn from further consideration for timber management. Within the alternative development process, further acres were identified for each alternative as not appropriate for timber management under the objectives for that alternative. Those acres were not used or not selected in developing the timber production schedule for that alternative. Therefore, no lands identified as unsuitable are included "in the base."

COMMENT NO. 12: Sites producing less than 50 cf/ac are not economic unless already roaded. If lands formerly classified as marginal are now included in the base, where is the analysis of higher-cost logging systems? We question the economics of timber management in roadless areas—they're roadless because of low timber values and/or high harvest costs.

FOREST RESPONSE:

Initial local road construction costs incurred to access unroaded areas were included in the FORPLAN analysis as variable costs. They were tied to the implementation of activities within a FORPLAN prescription and were expressed as costs per unit of output (see FEIS, Appendix B, Section IV). Road construction costs and logging costs both varied by allocation zone in the draft documents, based on miles of road already present and percent slope of the area These costs are displayed in Table B-IV-4 of Appendix B, and the process is discussed in the surrounding text. In the FEIS, costs were adjusted to management area basis using the same relationship as the original model The final provides a more

definitive breakdown of slope classes and roads than did the draft Plan and provides a better evaluation of the impact of roads. Benefits were developed for both existing stands and future managed stands within each working group based on species and diameter class.

COMMENT NO. 13: The process used to determine that no acres are subject to irreversible resource damage, especially to soils or watersheds, is not documented.

FOREST RESPONSE:

The determination was made in the Stage I suitability analysis. The process is summarized in Appendix J of the FEIS, and the process document is on file The analysis determined that no areas on the Forest were unsuitable due to irreversible resource damage because harvest can be accomplished without soil or water resource damage, if (1) the proper logging system is used, (2) the proper sale design is implemented, and (3) all other mitigation measures are utilized according to Best Management Practices (see Appendix E of the FEIS).

COMMENT NO. 14: Lands classified as nonforest or growing less than 20 cf/acre (24,920 acres shown on page B-10 of Appendix B) should be returned to the base because this category was deleted from administrative rules in 1982.

FOREST RESPONSE:

The 24,920 acres are incorrectly shown on Table B-II-1 as having been withdrawn because their growth was less than 20 cf/acre/year. Their growth figure is correct, but they were withdrawn for the following reasons, as stated in Appendix J of the FEIS:

1. *All cells comprising the lands are scattered, noncontiguous, and small.*
2. *Each parcel meets one or more of the regeneration difficulty factors documented in the Stage 1 Analysis.*
3. *The estimated contribution of these lands to the total potential harvest and long-term sustained-yield is calculated to be three-tenths of 1 percent.*
4. *The total area of these lands is approximately 1 percent of the total forested lands*

SUPPLY AND DEMAND—TRENDS AND MARKETS

COMMENT NO. 15: Table 2-3 of the Forest Plan shows the demand for timber as a function of supply decreases over time, yet management doesn't take that into account

FOREST RESPONSE:

*The demand estimates in Table 2-2 of the Forest Plan have been updated to reflect more current data (See Chapter III of the FEIS for details of the demand analysis process) These estimates show a general increase in demand for timber which peaks in the third decade. Alternative **F/M** has been designed to attempt to meet this demand schedule as much as possible while meeting other resource objectives.*

COMMENT NO. 16: The average cut figure is more representative of actual demand for Umatilla timber. Projected potential sale quantity (an amount you may or may not be able to sell) should be compared to the average cut figure.

FOREST RESPONSE:

Estimates of demand for Umatilla timber were based on historic harvest levels. See Chapter III of the FEIS for a description of the method used in the supply and demand analysis.

COMMENT NO. 17: The projected demand for Umatilla timber fluctuates greatly (Table 2-9). Why does the Forest plan to sell 154 MMBF/year for the first decade when demand could be as low as 182 MMBF for the entire decade?

FOREST RESPONSE:

*The Forest plans to sell 124 MMBF/year for the first decade under Alternative **F/M**. The anticipated average demand (on a yearly basis) for the first decade is 139 MMBF/year Only under conditions of severe recession in the wood products industry could demand drop as low as 18 MMBF/year. It is highly improbable that demand would ever remain that low for an entire decade. On the other hand, if conditions remain favorable for the wood products industry, demand could be as high as 262 MMBF/year in the first decade.*

In selecting a preferred alternative, the Forest sought to respond to and resolve a broad range of issues, as detailed in Chapter I of the FEIS. Issues regarding management of old growth habitat, roadless recreation, fisheries habitat, wildlife habitat, etc., were addressed in the selection of the final Plan. Providing a timber output somewhere near a level that meets industrial needs, and has little change in the economic and social environment while responding to the other issues, was addressed. The selected alternative, in the view of decision makers, is the one which best responded to the issues, concerns, and opportunities addressed by the planning effort The Plan resulted in an ASQ of 124 MMBF/year. The ASQ is well within the range of potential high and low demand for timber. This is not to say that the Forest will actually sell the ASQ every year, for it is true that demand fluctuates. The ASQ is an upper limit on the amount the Forest could sell per decade while managing all the other resources as provided for under the mix of management areas specified in the Forest Plan (Chapter 4)

COMMENT NO 18: The DEIS did not provide any useful information on the importance of Umatilla timber outputs to southeast Washington.

FOREST RESPONSE:

In the draft and final Plans, the Forest did not split outputs by state (or any other political subdivision) since Forest planning is done on a Forest basis. Timber outputs in Washington can be approximated by reviewing ASQ and TPSQ figures for the Pomeroy District, Appendix A (Table A-9) of the Plan. The actual effect is difficult to assess since logs flow both ways across state boundaries. Some timber from southeastern Washington could be processed in Idaho.

COMMENT NO. 19: The Forest Service has no data showing the contribution to the local timber demand and supply. In 1985 and 1986, the Forest did not sell 8 percent and 21 percent, respectively, of the timber offered, indicating offerings are greater than demand. The amount offered should be reduced

FOREST RESPONSE:

*Timber supply in the local area comes from a variety of sources including private lands, Native American tribal lands, BLM, and the Umatilla and adjacent national forests The demand for Umatilla timber as displayed in Chapter II, Chapter III (Table III-10), and Chapter IV of the FEIS, is based on the amount of timber actually harvested over the past ten years in the Blue Mountain area, and takes into account the amount that can be supplied by other nearby national forests and adjacent private and other public lands The amount of the timber offered for sale in any given year actually purchased depends on many factors. The ASQ (allowable sale quantity) of Alternative **F/M** is somewhat below the anticipated average demand.*

The history of unsold sales is indicative of market fluctuations; the low values of some of the Umatilla's timber stands; and a desire to treat areas of high silvicultural priority and productive potential, rather than to select for sale only timber of high economic value Species offerings are representative of the Forest inventory, which results in the offering of some species of low current value.

COMMENT NO. 20: The statement, that about 27 percent of net merchantable volume offered in 1986 did not sell, wrongly implies local industry doesn't need all the timber offered by the Forest—it's indicative of a cost reduction problem.

FOREST RESPONSE:

The Forest is constantly striving to find ways to reduce costs and improve efficiency. Some of the Forest efforts for reducing costs and enhancing revenues are described in the FEIS, Chapter III, Timber The fact that sales were not sold is an indication of a number of factors, not just sale costs Some are described in the above response (Comment No. 19). In addition, in meeting resource objectives, relatively expensive logging systems and treatment methods are sometimes needed in areas where the value of the current timber stands is low, or the species mix does not meet the current market needs Protection of the soil and water resources will not be compromised in order to sell such sales.

COMMENT NO. 21: The 1976-85 harvest averages do not necessarily represent the experience of western national forests in the last few years. Comparing the proposed harvest level to that average may cause belief that supply will expand under the preferred alternative. Comparing proposed harvest to that of the past few years would allow a more realistic assessment

FOREST RESPONSE:

The analysis period used as the basis for comparing the historic harvest levels to those under the selected alternative was updated to the 10-year period of 1979 to 1988 for the FEIS. This decreased the total average harvest volume for comparison from about 154 MMBF to about 149 MMBF Running 10-year averages of total harvest volume are displayed in Table III-16 of the FEIS As seen in the table, the 154 MMBF did not represent a low point in the data. The low occurred for the period 1977-86 reflecting the recession years of the early 1980's. The data also shows an increase in the 10-year average as a result of increasing harvest levels of the past few years, as you suggest

COMMENT NO. 22: DEIS Table III-10 is unrealistic in that the demand for wood is based only on existing mill capacities, and existing demand, only in the expected zone of influence The DEIS demand study doesn't account for increased demand for Umatilla timber as supplies from adjacent forests decline. The market for Umatilla wood is national in scope; the analysis used in the DEIS is too simplistic. The Umatilla should display analysis as directed in the USFS Chief's memo dated January 12, 1987.

FOREST RESPONSE:

The demand estimates are based on historic harvest levels, not on existing mill capacities The supply/demand analysis (as displayed in FEIS Table III-10) does include estimates of projected supplies from adjacent forests, using the best data available at the time of preparation of the FEIS. For example, the effects of supplies from adjacent forests on demand for Umatilla timber can be seen in the high demand predicted for the third decade.

The demand for wood products from the Pacific Northwest is indeed national in scope. But that demand is reflected in the past harvest activities upon which the Forest's demand projections are based. It is felt that the Forest's supply/demand analysis meets the intent of the above-referenced memo from then Chief Peterson.

COMMENT NO. 23: The 1986 timber harvest in the Umatilla's demand analysis counties exceeded its estimated "max probable demand" by 29 percent. The Forest should reconsider its supply/demand analysis, and highlight the projected supply/demand for high quality pine. Volume cut from NF lands in the 10-county area in 1986 was over 629 MMBF, showing higher timber requirements than the volume sold between 1975 and 1985. Using 1975-1984 timber harvest reports to predict max probable demand has given a false trend—it indicates depressed levels (DEIS p. III-19) These are conservative projections of demand, and Alternative F is still unresponsive. Regional supply projections of southern softwood harvest are obsolete. Housing demand is down, but there is no significant drop in total lumber consumption, contradicting references in the Plan to a downward trend in the wood products market.

FOREST RESPONSE:

The supply/demand analysis has been updated to reflect the most current 10-year period for which data is available (1979-1988).

COMMENT NO. 24: The decrease in new home construction and the shift to remodeling, and the importance of ponderosa pine as a primary species, indicate a need for a separate supply/demand study for pine.

FOREST RESPONSE:

Ponderosa pine is recognized as a very important species economically. A separate supply/demand analysis may shed some additional light on the potential impacts of a reduction in the amount of pine harvest relative to the historic levels However, such an analysis would probably not serve the purpose, for the following reasons:

1. *The potential demand for high quality ponderosa pine is probably very high and may have no realistic upper limit at least for the Forest.*

2. *In responding to the pine issue (Chapter I of the FEIS), every attempt has been made to schedule as much pine for harvest as possible—within multiple-use objectives, the objectives of the various management areas, the Forest-wide Standards and Guidelines, harvest methods (Appendix K), and responses to other issues.*

   The Umatilla ponderosa pine has been cut very heavily over the years (1 billion board feet since 1964), and the inventory volume just doesn't exist to allow the Forest to continue to harvest pine at higher levels for extended periods.

3. *Looking at the record of running 10-year averages of ponderosa pine sell Figure III-E, the amount of sale volume has declined steadily since 1980, and any losses in jobs due to a decline in pine output have probably already occurred. The selected alternative output level is approximately 80 percent of the 1979-88 average*

COMMENT NO. 25: The Forest's assumption that the demand curve for timber is flat may be erroneous, considering the proposed changes in species mix and harvest reductions for several forests.

FOREST RESPONSE.

The price-quantity relationship for the Umatilla NF timber stumpage is an unknown and is most likely unstable. It will vary based on changes in demand for wood products, export markets, technology, and other resource substitutes. The Umatilla NF assumed that the price-quantity relationship was horizontal, that any amount of timber offered would be sold, and that a change in the Forest's portion of the total supply would not influence price These assumptions have not been proven untrue. Refer to FEIS, Chapter III. Given the level of uncertainty about future stumpage values, the Umatilla also conducted a sensitivity analysis to display the effects of different price levels Refer to FEIS Appendix B.

COMMENT NO. 26: The Umatilla overestimated probable supply from adjacent forest lands. Non-national forest lands have provided a disproportionate share of the historic cut, supplies from non-national forest lands will have to decline, thus increasing demand for national forest timber in order to maintain a stable supply.

FOREST RESPONSE:

As stated in Chapter III of the FEIS, estimates of future supplies from non-national forest lands (BLM, state, and nonpublic) are based on acknowledged capabilities of those lands, given current and proposed management direction and constraints and the level of inventory knowledge in northeastern Oregon and southeastern Washington. The supply estimates were not based on the historic cut from those lands. In fact, the FEIS states that "...supplies from private lands will be declining in the next 20 years, thereby putting upward pressure on demand and prices from national forest timber supplies."

COMMENT NO. 27: Supply is a function of economics—portions of ASQ that industry can't afford to buy aren't part of real supply.

FOREST RESPONSE:

Timber that industry can afford to buy changes with market conditions "Uneconomic" timber sales can become economic within a very short time period The Umatilla has had purchasers come in and purchase a sale a month or two after having received no bids—without readvertisement or any changes to the sale package Historically many species that were undesirable at one time have become marketable. For example, the Forest has also seen markets develop in the recent past for lodgepole (both live and dead), white fir, and other species that industry had not previously used. The forest industry has adjusted to changing supplies and species through technological changes in the forest and mill. Timber in a particular area or of a particular species that isn't "economic" today, may well be tomorrow.

The allowable sale quantity comes from management areas that provide for scheduled timber harvest, and the total makes up the supply at a given time. The real value of timber increases over time.

COMMENT NO. 28: New markets for wood products in the Pacific Rim are being explored, exclusion of future supplies will eliminate future opportunities.

FOREST RESPONSE:

Countless possibilities exist for future expansion (or loss) of markets The export of unprocessed timber from the Umatilla National Forest is prohibited under current laws, as is the substitution of unprocessed national forest timber for exported, unprocessed logs from private lands At the present time, there is a limited export market for wood products processed in the United States If such a market develops, it will represent an expansion of present markets. Some of the alternatives developed in the FEIS would provide timber output levels that would allow for this type of economic growth. Alternative F/M provides timber output levels which would restrain economic growth This is because of the balance of emphasis in this alternative between commodity and non-commodity values.

COMMENT NO 29: Outputs indicate some alternatives will not meet the demand for firewood.

FOREST RESPONSE:

Detailed data on firewood use has been compiled only since 1983. As displayed in Table III-11 of the FEIS, the total number of permits issued reached a peak in 1984, and the total volume output peaked in 1985 Demand is down because of the improved efficiency of wood stoves and because of the relatively low cost of alternative energy sources. Assuming current trends continue, the Forest expects to be able to meet demand for firewood under the selected alternative, in the foreseeable future.

ALLOWABLE SALE QUANTITY (ASQ)

COMMENT NO. 30: No evidence is presented in the planning documents as to why the Forest Service would sell less volume than allowed by approved unit plans at the expense of community stability. This is in direct conflict with the "continuous supply" requirements of the Organic Act, Multiple-Use Sustained-Yield Act, and NFMA.

FOREST RESPONSE:

Continuous supply should not be interpreted as a set rate of harvest, year after year for perpetuity, but rather a supply that is uninterrupted over time; it fluctuates as new planning information and change are assimilated, and new and revised plans are adopted The Forest is currently operating under the 1963 Timber Management (TM) Plan in conjunction with unit plans The TM Plan has been adjusted many times through the years, the most recent for the addition of wildernesses The Forest Plan would not necessarily be the same as the unit plans because of changes in Forest inventories, yield tables, land suitability, and other factors In addition, harvest levels are determined in response to resolution of a broad range of issues (of which timber harvest level economic and social effects are only two) The new plans reflect different rates of harvest

Providing for community stability is not something that has been mandated through legislation. However, implementation of the selected alternative is not expected to have any significant adverse effects on the local communities.

COMMENT NO. 31: The importance of maintaining appropriations at levels sufficient to make the required investment in silvicultural activities is not shown anywhere. The Plan does not show how ASQ will be adjusted based on Earned Sales Quantity. This is a major omission in the document.

FOREST RESPONSE:

"Earned Sales Quantity" in the comment is assumed to mean "earned harvest factor." Appendix A of the Forest Plan specifies how adjustments to the ASQ will be made if earned harvest activities are not accomplished. Occurrences that may trigger adjustments, and according actions that would be taken, are:

1. *When accomplished earned harvest activities vary more than 10 percent from the planned level, a change in the allowable sale quantity will be made based on a proration adjustment. The Forest Plan will then be amended to portray the new ASQ.*

2. *When cumulative chargeable (regulated) sold volume (measured in cubic feet) varies by more than 10 percent of the planned volume, an adjustment in sale offerings for the remaining planning period will be triggered. The adjustment will be made with the objective of meeting the decade allowable sale quantity.*

3. *When cumulative changes greater than 5 percent of the acres classified as capable, available, and biologically suitable occur, the allowable sale quantity will be recomputed using the Forest model. Cumulative changes in management area boundaries greater than 5 percent of the acres classified as capable, available, and suitable will also trigger a recomputation of the allowable sale quantity using the Forest model. The Forest Plan will then be amended to portray the new allowable sale quantity (ASQ).*

4 *When agents, such as fire, insects, or disease, affect a cumulative total land area greater than 5 percent of the acres classified biologically suitable, a new allowable sale quantity will be calculated using the Forest model, and the Forest Plan will be amended to portray the new ASQ.*

Amendment procedures can be found in Chapter 5 of the Forest Plan

COMMENT NO. 32: The Plan should display a distinction between allowable cut and planned or projected cut. Congress may not fully fund the sale program, and rarely are all offered sales actually sold; actual volume offered and sold could be substantially less than the ASQ numbers published in the DEIS.

It is misleading to assume that the Plan ASQ will be sold, because of its depending on funding, and because rarely are all sales sold. If the Umatilla has traditionally harvested only 75 percent of the ASQ, then a 25 percent reduction in the ASQ will not reduce revenues, and may increase employment.

FOREST RESPONSE:

The allowable cut (sell) sometimes referred to as potential yield under the old timber management plans and allowable sale quantity (ASQ) under the new Forest Plan is the average volume of "green" timber available for sale in any 10-year period. Normally the ASQ is referred to as the volume available for sale on an annual basis, but accountability is on a 10-year average. ASQ is a potential upper limit for each alternative and Forest Plan. Actual sell volume does depend partly on funding. While the Forest may be funded to sell less (or more) than the ASQ requirements, ASQ is still a measure of the potential of each alternative, and therefore is useful for comparing the differences between them.

The planned cut (sell) is determined by Congress through the budgeting process on an annual basis and is reflective of the Forest ASQ, but could be higher or lower in any particular year. It would not exceed the accumulated annual ASQ over a 10-year period. See item number 2 in the above response for adjustments in ASQ.

Planned or projected cut (not sell) is an estimate of how much volume under contract the industry plans to harvest

Since 1964, the Umatilla's 10-year averages of sawlog sell has ranged between 66 and 90 percent of the potential yield (the equivalent of the ASQ) See Table III-17 of the FEIS The average for the 25 years since 1964 was about 80 percent. It's expected the Forest will offer the entire ASQ but may not sell the entire quantity.

COMMENT NO. 33: FORPLAN indicates the drop in pine output can be delayed by moving up the third and fourth decade volumes to the first and second decades. FORPLAN analysis indicates a gradual "ramp down" of pine harvest would be possible. A departure alternative for pine is needed.

FOREST RESPONSE:

The ponderosa pine harvest level was reevaluated in the period between the draft and final Plans in two ways: a relook at past harvest, and a reanalysis of the Forest potential for increasing the ponderosa pine harvest level.

Decadal data on ponderosa pine harvest shows a continued decline with the addition of the most recent years' sell. Most recent 10-year average ponderosa pine sell is 29 MMBF/year, rather than the 35 MMBF/year reported in the draft Plan. (See Figure III-18 in the FEIS.) The change reflects continued emphasis on harvest of the large ponderosa pine and declining inventory.

Opportunities for adjusting the ponderosa pine ASQ were also identified and an analysis was made. In the final Plan, ponderosa pine volumes are increased from the draft proposal through the first decade to a total of about 23.5 MMBF/year. The revised ponderosa pine volume figure is one that can be accommodated without "high-grading" the mixed conifer stands.

COMMENT NO. 34: How much volume will be cut in unsuitable areas?

FOREST RESPONSE:

The Forest will not be cutting any timber on lands designated as ***unsuitable*** *in the Stage I analysis of suitability.*

In lands identified as not selected (not suited) for timber production under the selected alternative (such as Management Area C8, where provisions for unscheduled timber harvest are made), harvest may occur only when it is done specifically to benefit or enhance resource values other than timber, such as wildlife habitat. Timber harvest in those areas will not be done to meet timber management objectives. Volume from such harvest is not included in the calculation of ASQ The total volume from such areas is expected to be very minor, probably less than 2-3 percent of the volume sold in any given year

TECHNICAL CONCERNS

DISPERSION

COMMENT NO. 35 It is unclear what the Forest's harvest dispersion constraints are. The Plan should define "logical harvest unit" and the dispersion constraint for each of its resources.

FOREST RESPONSE:

Dispersion constraints vary by management area, depending on resource objectives to be achieved For general forest areas, harvest acre amounts range from 12 5 percent to 30 percent of a subwatershed per decade Other management areas have different constraints that limit timber harvest The dispersion constraints can be found in Chapter 4 of the Plan in the Revised Forest-wide Standards and Guidelines and Management Area sections, and also in Appendices B and D of the FEIS The sections have been rewritten to improve clarity. A definition of "logical harvest unit" has been added to the Plan's Glossary.

For watershed, the dispersion standard states that no more than 30 percent of a subwatershed will have timber stand age classes of 0-10 years. The standard is a management requirement for the Forest and applies to several management areas. For timber, created openings will be separated by one or more blocks of land that are not openings and are logical harvest units, and large enough to meet the resource requirements of the Plan. Several of the management areas have additional constraints that define what it takes to meet resource requirements (see A3, A4, A5, C4, C5, C6, C7, F1, F4, and F4A) Further "dispersion" constraints are placed by cover objectives and habitat requirements in some management areas The determination of all harvest dispersions is accomplished in project planning and documented in the project environmental analysis.

ROTATION LENGTH

COMMENT NO. 36: It is not necessary to have rotations in excess of 180 years for old growth and visual reasons. Such rotations are unsound from an economic and productivity standpoint, and are unwarranted in terms of forest ecology as well. Uneven-aged management practices can create visually-appealing landscapes in half the time envisioned in the Plan's viewshed 1 areas.

FOREST RESPONSE:

Rotation lengths were set to meet the NFMA requirement for culmination of mean annual increment, and to accomplish management objectives. The rotations referred to here are based on the latter, and include a form of dispersion constraint that spreads the management activities in a viewshed over a longer time, resulting in less evidence at any one time. They are not intended to be the most efficient in terms of economics or productivity, but rather to provide pleasing forested landscapes While such a conservative approach is not necessary for ecosystem integrity, management activities will be based on sound ecological principles.

Regarding uneven-aged management, there has been a change between the draft and final Plans that places much greater emphasis on the use of uneven-aged management in viewshed areas. In fact, uneven-aged management by single tree selection in the ponderosa pine working group, or by group selection in the north and south associated working groups, is now the preferred silvicultural system. For further information, see Chapter 4 of the Plan and Appendices D and K of the FEIS

YIELD TABLES

COMMENT NO. 37: The empirical and managed yield tables do not reflect forest influences that should reduce the expected yields. Further, they include overly optimistic assumptions of the value of cultural treatments.

FOREST RESPONSE:

The empirical yield tables reflect the growth and yield of existing stands until they undergo a regeneration harvest. They were prepared by the Regional Mensurationist The impacts from ongoing insect and disease problems are captured by the empirical yield tables since they are built using inventory plot data. Stand influences, such as mortality, reduced vigor and growth, and reduced stocking, will affect the periodic forest inventory, and in this way be included in the empirical yield tables. The same is true of influences such as adverse compaction or other man-induced reductions in site quality that may affect yields.

The managed yield tables reflect the anticipated growth of stands once they are regenerated. They are modeling estimates put together by the Forest timber planner with assistance from the district silviculturists. Since they are estimates of what will occur under a managed situation, models were used to construct them. For the Forest, the stand prognosis model (Gen Tech Rep INT-133, 9/82) was used. Any modeling used is imperfect; however, the best estimates available (based on research results and field experience) were used. Insect and disease concerns were not modeled because there weren't (and still aren't) any available models for this area and many of the impacts will be minimized through the selected management practices.

To meet limitations imposed by the FORPLAN model, every case of management could not be included Instead, average cases were used, realizing that in any specific case the actual yield may be higher or lower than the figure the prognosis came up with; hence, it is recognized that any particular plantation may be over- or under-stocked, but the average condition is what was modeled

Assumptions as to what will be merchantable in the future are estimates based upon best professional judgment looking at past and current market conditions and making a projection into the future We believe that the assumption regarding commercial thinning at 8" diameter is a sound one and supportable by what is currently sold and marketed.

COMMENT NO. 38: Utilization standards consist of minimum tree diameters of 7 to 9 inches, depending upon species If minimum rotation length is based on the time required to achieve 95 percent of CMAI, what standard takes precedence?

FOREST RESPONSE:

The utilization standard pertains to individual trees, while the culmination of mean annual increment (CMAI) standard pertains to entire stands. Both standards apply Stands may be harvested upon reaching 95 percent CMAI, and individual trees in them must be used if utilization standards are met

COMMENT NO 39: Yield tables depict overestimated volumes to be produced by allowing commercial thinnings when the average stand diameter is 8 inches. The Forest has no evidence that it can sell such material and meet the regional criterion regarding utilization of material harvested The yield tables need to be revised to reflect the current practices, and the planned uneconomical future commercial thinnings excluded.

FOREST RESPONSE:

Since they pertain to future events, the yield tables contain certain assumptions that will be revisited when plans are revised One assumption is that small-sized material obtained from the envisioned first commercial thinning will be merchantable in the future. Since such thinnings will be done 40-60 years from now, there is no reason to base expectations on today's reality. Given the Forest ability to market small-sized lodgepole pine, and current commercial thinning sale units with similar-sized material, the assumption seems valid

In stands receiving more than one commercial thinning, the average diameter harvested will be about 8 5 inches In stands receiving only one commercial thinning, the average diameter will be about 13 inches.

TIMBER ECONOMICS

COMMENT NO. 40: Economic studies show that site productivity affects economic returns more than timber prices, species, or location The Umatilla NF is a low productivity forest The Plan fails to identify lands that may be uneconomic due to the cost of managing for timber production. The tree farm concept will eventually result in greatly reduced economic benefits.

FOREST RESPONSE:

The Umatilla NF is a highly productive eastside forest. Fertile soils and above-average eastside rainfall contribute to this fact. Over half of the suitable lands produce in excess of 50 cubic feet per acre per year (see Chapter 4 of the Plan) As new plant association typing is being completed, early indications are that the potential productivity of future stands is even higher than our initial assumptions.

The costs of growing and managing the resources are included in the FORPLAN analysis; for the selected alternative, the present net value (PNV) is estimated to be over $1 billion The 1988 Timber Sale Program Information Reporting System (TSPIRS) report to Congress reflected an anticipated future PNV of $1.9 million dollars from the acres harvested in 1988; the benefit cost ratio was 1 53. This report is on file

COMMENT NO. 41: What are the cost differences between even-aged and uneven-aged management?

FOREST RESPONSE:

The true cost differences are unknown at this time since the Forest has never done any true uneven-aged management. The cost assumptions used in the FORPLAN analysis can be found in Appendix B of the FEIS. They were based upon the experience of others, and the experience and judgment of local managers. Use of cost-saving natural regeneration, where biologically possible, is a strategy that can be applied to both even- and uneven-aged management practices; so the cost savings from regeneration are somewhat independent of the silvicultural system chosen. In fact, many instances are envisioned where uneven-aged group selection is applied and planting will be needed because of (1) pest problems on the site, (2) the need to introduce resistant species, or (3) the lack of suitable seed trees in the adjacent stand.

COMMENT NO. 42: Target diameter for final harvest in the managed forest is about 17 inches. Timber value tables need to be changed to reflect the high values associated with larger diameter trees. Diameter at final harvest should be 20 inches. Has the Forest considered the economic tradeoffs of harvesting ponderosa pine at 7 inches versus 20 inches or greater? Much will be lost in terms of economic and biological value if stands are harvested at 7 inches.

FOREST RESPONSE:

The rotation length for the managed forests of the future were set when the stands reached 95 percent or more of the culmination of mean annual increment Average tree diameters will be 17 inches, with larger trees present. The 7 inch figure reflects a merchantability standard, not the size at rotation.

Differences in value by species by size class were used in the economic analysis. Larger diameter tree classes have higher values, based on Forest experience The amount of the difference between size classes was species dependent.

COMMENT NO. 43: Ponderosa pine has increased in value and will probably continue to do so more rapidly than other species. Your analysis lumps all species together in applying a 1 percent real price increase over time. This approach masks the value of growing high-quality large-diameter pine. Further, the assumption in the DEIS that 8-10 inch pines are worth 70 percent of the value of pines larger than 25 inches masks the real differences due to size.

FOREST RESPONSE:

Economic analysis requires the making of best estimates to forecast future events. A 1 percent real price increase was used to increase the value of all species for the first 50-year period After that, no real price increases were used. The starting point was the value for each species during the period of 1977-1983. There are significant value differences reflected between species that are carried into the future. The use of the 1 percent real price factor was directed by the Regional Office

In future revisions, the economic assumptions made in this Plan will be reviewed and, if research or empirical data exist to modify them, they will be changed at that time. For further information, see Appendix B of the FEIS or the "Economics of Timber Production" planning process document on file

COMMENT NO. 44: The Umatilla chose not to use the market prices (for timber) in the economic analysis, but instead to use considerably higher values. A strong case can be made that the DEIS overestimates the value of timber. The document consistently overestimates commodity values.

FOREST RESPONSE:

Timber values used in the FEIS analysis are based on actual stumpage values from cut and sold reports for seven forest species harvested from April 1977, to September 1983, adjusted to 1982 dollars (Process Document No. 49). See Appendix B of the FEIS for a discussion of the process.

COMMENT NO. 45: Below-cost sales are not identified/analyzed (in the Plan or the DEIS). Lands from which they come are not deleted from the timber base.

FOREST RESPONSE:

Below-cost sales are timber offerings in which the stumpage receipts plus asset value do not exceed the total cost of timber sale and administration The recent Forest timber sale experience on a Forest-wide basis is shown in FEIS Chapter III, Timber. Essentially, the Forest does not have a below-cost sales problem Only in 1982 did the Forest experience timber sale costs higher than receipts; this was a very poor market year in which the Forest sold a large amount of dead lodgepole.

The regulations do not require that sales with a negative benefit-cost ratio be identified or be deleted from the timber base. They do require that every effort be made to design prescriptions which are as economically-efficient as possible, which the Forest has done and reported in Appendix B. They also require that alternatives be developed which meet the multiple-use objectives in an economically-efficient way, to the extent feasible, which has also been done.

The Forest Service is charged with managing for a multitude of resources in such a way as to maintain long-term productivity of the land and assure that Forest goods and services are available to future generations of Americans. Meeting these other responsibilities, in some cases, will require timber harvest on lands which, from a strictly economic view, may not have a positive benefit-cost analysis The Forest harvest of dead lodgepole pine certainly falls into this category.

The Forest Plan and FEIS are programmatic documents Determination of the economic efficiency of individual timber sales will require site-specific analysis that will take place as the Forest Plan is implemented. The below-cost sale issue will be dealt with on a sale-by-sale basis A new accounting system (TSPIRS) has been designed to keep track of below-cost sales, and will be used by the Forest.

COMMENT NO. 46: In the DEIS, we could not determine that the Umatilla identified direct costs or compared direct costs to anticipated receipts. Instead, the Umatilla classified costs as "fixed" or "variable " (This is in the context of below-cost sales, and the question of whether or not any of the proposed future sales will recover their costs)

FOREST RESPONSE:

The Umatilla classified direct costs as either fixed or variable, depending on whether they were the same for all alternatives or varied by alternative Both fixed and variable costs are direct costs The direct costs are compared to the anticipated receipts within the PNV calculations in FORPLAN The process is explained in FEIS Appendix B, Section IV.

COMMENT NO. 47: The costs of timber management are underestimated by not including the overhead costs associated with timber management activities. The Forest Service fails to include the other costs involved in timber management.

FOREST RESPONSE:

All overhead costs for management, as well as direct costs for timber sale preparation, administration, site preparation, reforestation, and timber sale support costs for recreation, cultural resources, fisheries, wildlife, and so forth, are included in timber management costs in the FORPLAN model. See Appendix B of the FEIS for a complete discussion of the costs used in the FORPLAN analysis

COMMENT NO. 48: The DEIS contains no discussion of, or reference to, the steps the Forest will take to reduce timber costs and/or enhance revenues, while meeting multiple-use objectives.

FOREST RESPONSE:

A discussion and list of some of the items the Umatilla has identified for reducing costs and increasing revenues are presented in Chapter III of the FEIS Controlling or reducing cost is a management

concern receiving ongoing emphasis. Many items are beyond the scope of this planning process, and others are addressed at the project planning level Some identified areas are:

1. *Lower design standards for local roads*
2. *Natural regeneration of harvested stands where silviculturally appropriate.*
3. *Electronic preparation of timber sale contracts.*
4. *Standardized appraisals for lodgepole pine sales to reduce appraisal costs*
5. *Increasing the amount of contract work, such as for stand exams and timber sale layout.*
6. *Decreasing the amount of mechanical slash treatment, and increasing the amount of broadcast burning*
7. *Increasing the quality and value of regenerated stands through the tree improvement program.*
8. *Restoring ponderosa pine to its historic percentage of the Forest species composition.*
9. *Decreasing the amount of defect in stands through stocking level control*

COMMENT NO. 49: The feasibility of economically harvesting and managing timber in steep areas, such as Willow Springs and Texas Butte, is questionable.

FOREST RESPONSE:

The economic feasibility of harvesting and managing timber on steep areas has been demonstrated on the Umatilla, as evidenced by the increasing amounts of cable and helicopter harvest volume over the years. The economics of harvesting and managing timber, including that on steep ground, is described in Appendix B of the FEIS

COMMENT NO. 50: Tradeoffs for roadless areas have not been clearly displayed.

FOREST RESPONSE:

Economic and timber harvest potentials for each roadless area are displayed in Table C-8 of Appendix C of the FEIS Included in the table are the allowable timber sale quantities that each roadless area could contribute for the first decade of the planning period, and the estimated change in present net value that occurs with the addition or deletion of each area from the timber base.

COMMENT NO. 51: MMR's have placed significant, unnecessary reductions on decision space. For example, the timber benchmark shown on page II-11 of the DEIS appears to have MMR's applied, when the high end benchmark should have been run without MMR's. Unit size and dispersion, pine marten habitat, riparian zones, visual corridors, old growth, and elk and deer habitat have significantly reduced the first decade harvest volumes.

FOREST RESPONSE:

The upper end of the decision space for first decade ASQ as displayed in Table II-3 of the FEIS is 311 MMBF/year (Benchmark 5, Maximum PNV with departure) This run did include MR's The highest, first decade, sustained-yield timber output for a maximum timber run without MR's was 207 MMBF/year (Benchmark 1)

MR's have been included in the Forest analysis for dispersion, riparian areas, and old growth, but were not incorporated for unit size or visual corridors. The pine marten is an indicator species for old growth habitat. An MR was not incorporated for elk or deer habitat, but a discretionary constraint to maintain minimum cover on winter range for elk was applied to the alternatives and benchmark runs with MR's. Table II-2 in Chapter II, and Appendices B and M of the FEIS detail the tradeoffs resulting from the incorporation of the MR's in terms of effects on PNV and harvest volumes The Forest analysis indicates that the MR's do not reduce the first decade allowable sale quantity by a very large amount, the total is 14.3 MMBF/year.

COMMENT NO. 52: A 1 percent increase in timber value increases timber yields that are not sustainable. FORPLAN analysis does not accurately reflect the value of pine in the long run. We question the use of a 1 percent price trend for all stumpage, regardless of species, size classes (speculative), whereas more than

1 percent may be in order for pine, based on recent market history. Historically, stumpage prices have risen 2 to 3 percent per year.

The EIS distorts the value of resource outputs by inflating the value of timber over time while keeping all other benefits and costs stable

FOREST RESPONSE:

A 1 percent per year increase for stumpage values was specified by a Regional Office memo dated September 25, 1984, as stated in Appendix B of the FEIS The figure is supported by a review of research on the subject by the Washington Office (WO) and Regional Office (RO) and a sensitivity analysis conducted by the RO. There is uncertainty on the subject about values to be used. Other research suggests that the value should be higher. It's possible that the real price of pine has historically appreciated at a rate greater than 1 percent, and perhaps other species have appreciated at rates less than 1 percent An overall average of 1 percent is probably good, and is supported by research. As the rate of stumpage appreciation increases for a particular species (such as ponderosa pine), the FORPLAN Model will delay scheduling of harvest because it becomes more economically desirable.

A 0 percent real price trend was used for all other resources as specified by WO direction, as was a 0 percent real cost trend for all future costs; this assumes that changes in these prices and costs will equal the rate of inflation

For all nondeparture alternatives, the FORPLAN model is constrained to never schedule less timber volume for harvest in a decade than was scheduled in the previous decade. This is known as nondeclining yield Additionally, the harvest volume in the last decade of the planning horizon must be less than or equal to the long-term sustained-yield calculated for the alternative. These two constraints ensure that timber harvest volumes are not raised beyond a sustainable level

SILVICULTURAL PRACTICES

EVEN-AGED MANAGEMENT

COMMENT NO. 53: Clearcutting has a devastating impact on every other multiple-use sector in the general forest and can no longer be considered an acceptable forestry practice in view of the damage to all other resources.

FOREST RESPONSE:

Clearcutting is legally, academically, and scientifically a valid and accepted tool for vegetative manipulation to accomplish resource objectives. As with any tool, it can be misused or misapplied The Forest-wide Standards and Guidelines section of Chapter 4 of the Plan and Appendices D and K of the FEIS provide direction that forms the basis for the correct application of clearcutting.

Clearcutting, properly applied, provides many benefits such as increased forage and herbage production for wildlife and livestock, increased edge effect for wildlife, increased tree growth and fiber production, reduction of residues and reduced hazard from catastrophic wildfire, improved forest health, increased snow catch which often results in increased water supplies for fish and irrigators or other downstream users, improved future visual characteristics, and better access for recreational users, to name a few.

COMMENT NO. 54: The Plan infers that clearcutting controls diseases such as root rots Even-aged stands are more susceptible to insects, diseases, and fire.

FOREST RESPONSE:

In the FEIS, Chapter IV, Forest Insects and Diseases section under Direct Effects, the subsections of Regeneration discuss the effects of even- and uneven-aged harvest systems on insect and disease populations The planting of disease resistant species and the removal of the seed source for

nonresistant species controls the root diseases. Clearcutting, and to a lesser degree other even-aged practices, offers the best strategies for controlling the root diseases

The difference in susceptibility to insects and disease is more related to species and vegetative diversity than to the silvicultural system chosen. Uneven-aged practices, particularly single-tree selection, in conditions commonly found on the Forest can accelerate insect and disease problems by producing conditions favorable to insect and disease pests Such practices favor shade tolerant species such as grand and subalpine fir, Engelmann spruce, and Douglas-fir, which are highly susceptible to all of the common pests found on the Forest. Even-aged practices on the other hand produce conditions that favor shade intolerant species such as ponderosa pine, western larch, and lodgepole pine that are resistant to most pests

Diversity plays a major role and a diverse ecosystem is inherently more stable than a monoculture. The Plan stresses diversity of species and age classes, regardless of the system chosen for an area Even in clearcuts, where ecological conditions permit, two or more species will be favored and stocking of other species encouraged. See the Forest-wide Standards and Guidelines, Timber section, in Chapter 4 of the Plan.

In regard to fire, the differences between even- and uneven-aged management are less clear; however, certain inferences can still be made Even-aged management produces high levels of slash residue at widely spaced intervals It is common to effectively abate the hazard from such residue with treatments immediately after harvest. Even-aged stands usually lack multiple canopies, and thus have an absence of "ladder fuels" that carry fire to the crowns of trees and cause stand-destructive fires Because of their structure, uneven-aged stands contain these ladder fuels. Uneven-aged practices produce lighter fuels, but at more frequent intervals. Such fuels are more difficult to treat to abate the hazard, because of concerns for protecting trees needed for stocking that by definition occur in several age and size classes, often from seedlings to mature trees. Also, uneven-aged management frequently favors the shade tolerant species that are less resistant to the effects of fire, limiting the tools available to treat residue.

COMMENT NO. 55: Silvicultural practices should emulate natural ecosystems What are the effects on species diversity and composition under even-aged management? Even-aged stands are slower to establish.

FOREST RESPONSE:

Silvicultural practices are based on site-specific conditions (see Forest-wide Standards and Guidelines for timber in Chapter 4 of the Plan and Appendix D of the FEIS) and on local studies and research by plant ecologists on plant community makeup and responses to management Due to past management practices such as economic selective logging and the exclusion of natural fire, the forest we see today is not natural and is very unstable, witnessed by the widespread problems with insects and disease. Strictly natural emulation is not possible, but silviculturists can still work with nature to design and produce a more natural and stable condition. Quite often a return of more shade-intolerant species is dictated by plant community and ecosystem considerations For instance, in the ponderosa pine working group, an even-aged system will rarely be used, whereas in the lodgepole pine working group it will be the most common system used.

Regardless of the system chosen, the Plan calls for strict attention to vegetative diversity The Forest will not be grown as a monoculture except where ecologically dictated, such as on dry, pure ponderosa pine sites, or lodgepole pine cold-air sites. No species will be eliminated under either system. Even-aged management or group selection practices will allow for the establishment and wider distribution of species that have declined in occurrence due to selective logging, the exclusion of natural fire, or other reasons.

Even-aged stands are likely to establish themselves more quickly than uneven-aged stands since they favor seral species which occupy sites faster and have greater growth rates. Of course, uneven-aged stands retain some high canopy, and this hinders the establishment of seedling regeneration

COMMENT NO. 56: The proposed level of clearcutting is too high. More emphasis should be placed on shelterwood and selection harvesting.

FOREST RESPONSE:

Based upon public comment, the amount of clearcutting proposed for the Forest has been reduced, while use of other even-aged and uneven-aged methods has increased (see Chapter 4 of the Plan, Chapter II and Table II-6B of the FEIS, and FEIS Appendices D and K). Every silvicultural prescription will analyze the opportunity for use of shelterwood and uneven-aged management

Where clearcutting is done, managers will attempt to soften the appearance and potential effects through the management of more advanced regeneration (when appropriate), better unit design, sensitivity for size, and less thorough slash cleanup and site preparation.

COMMENT NO. 57: Clearcutting should be used only when it is the "optimum method " The Plan does not address optimality. Clearcutting should not be done for economic reasons alone.

The National Forest Management Act of 1976 stated in Section 6(g)(3)(F)(i) that clearcutting would be used "only where (it) is determined to be the optimum method (and) is determined to be appropriate, to meet the objectives and requirements of the relevant land management plan." A determination of optimality is required by Forest Service Manual 2471.11 as well A section addressing optimality on the Forest has been added to Appendix K of the FEIS (also see Forest-wide Standards and Guidelines for timber in Chapter 4 of the Plan). Use of clearcutting and its optimality is based on guidance in the Regional Plan, the nature of the forest conditions and insect and disease problems, plant community and species considerations, logging method feasibility and probability of success, and economics, all within the context of meeting resource objectives portrayed in the Plan.

COMMENT NO. 58. A 10 percent leeway in clearcut acres is allowed under the Plan (5-11). The action indicated in the response is not explicit.

FOREST RESPONSE:

The monitoring plan contained in Chapter 5 of the Plan sets a 10 percent deviation (plus or minus) from the number of acres clearcut as a trigger to start other actions The first action triggered is a review of the situation. The actual treatment applied to the land will be a site-specific determination; numbers given in the Plan are only estimates, often based on modeling assumptions Through monitoring, a determination will be made as to whether the estimate was wrong or if the treatment was wrongly applied to the land. A primary test will be to see if resource objectives are still being met on the land despite the deviation. If they are and other factors do not significantly change the intent of the Plan, the deviation will be noted and considered in the next planning update. If objectives are not being met, and changes are significant, the Plan will be amended or revised See the Amendment and Revision section of Chapter 5 of the Plan for a description of the process for changing the Plan.

COMMENT NO. 59: It appears from Table 4-12 and Table 4-16 in the Plan that the Forest is cutting in excess of growth. How long can this go on?

FOREST RESPONSE:

Table 4-12 of the proposed Plan gives the net annual future Forest growth as 30 1 million cubic feet. This figure reflects the growth of merchantable timber only and not the growth of rapidly growing young plantations. Table 4-16 states that the first decade Timber Sale Program Quantity is 37 3 MMCF. This figure is for all timber products, including firewood and salvage of dead material. When only green growing sawlogs are considered, the Allowable Sale Quantity is 27.5 MMCF, which is below the projected growth from Table 4-12 The information has been updated for the Forest Plan. The same relationships still hold as seen in Tables 4-16 and 4-19

UNEVEN-AGED MANAGEMENT

COMMENT NO. 60: The Forest should explore opportunities for greater use of uneven-aged management where biologically and economically feasible in order to reduce perceived conflicts between timber production and other resource management objectives. It would be particularly appropriate in visual, wildlife,

and riparian areas, and for the management of ponderosa pine. The effects of uneven-aged management would be much more acceptable than clearcutting to leave our future generations. The general aesthetic appearance of the forest would be improved.

FOREST RESPONSE:

Between the draft and final, some major changes have taken place regarding the amount and role of uneven-aged management on the Forest. For comprehensive reading of the changes, see Chapter II of the FEIS, Chapter 4 of the Plan (Forest-wide Standards and Guidelines and Management Areas sections), and Appendices D and K of the FEIS.

Uneven-aged management is now the preferred silvicultural system in the ponderosa pine working group, for all management objectives including timber, where stands are free of western dwarf mistletoe For the other working groups, resource specialists were given the choice of using uneven-aged management as a tool for accomplishing objectives; it was added to FORPLAN accordingly. It will be used primarily in areas with high visual, some wildlife, or riparian concerns in these working groups.

Insect and disease problems limit the use of individual tree selection in the north and south associated working groups. The high costs of harvest and management on slopes greater than 30 percent resulted in very little use of uneven-aged management on such areas

Costs for uneven-aged management will be higher than for even-aged systems. Updated costs have been added to Appendix B of the FEIS.

COMMENT NO. 61: What are the impacts of insects and disease on the use of uneven-aged management?

FOREST RESPONSE:

Insects and diseases can severely limit the sound biological use of uneven-aged management practices. Ignorance of the impacts can negate short-term benefits and result in long-term disasters. Discussions of the various pests of concern on the Forest are contained in Chapters III and IV of the FEIS. Briefly, the relationship between uneven-aged management and insect pests such as the tussock moth and western spruce budworm revolves around what tree species are favored by the practices. The aforementioned two insects prey primarily on true firs such as grand and subalpine fir, and on Douglas-fir. These tree species are shade tolerant; that is, they prefer shady or partially shady conditions such as found in individual tree selection practices, and reproduce best under such conditions. Therefore, individual tree selection would favor the increased occurrence of tussock moth and budworm. However, practices such as group selection or even-aged management create more open, sunny conditions which favor the shade intolerant species such as ponderosa pine and western larch which are not preferred by the tussock moth and budworm.

The dwarf mistletoes spread most readily in multi-storied stands where their seeds rain down on trees in the lower canopy classes and continually infest them until mortality occurs. For this reason, individual tree selection cannot be done in mistletoed stands. Group selection can be done, but with growth losses and increased mortality expected from infection along treatment-area boundaries. The case of root rots is similar to that described for insects. Primary host tree species exist for the root diseases; again the most susceptible species are the true firs and Douglas-fir. Practices such as individual tree selection that favor these species would increase the occurrence of, and losses from, root rots. With group selection, the shade intolerant nonhost species such as ponderosa pine would be favored and losses minimized.

COMMENT NO. 62: The Forest treatment of beetle-killed lodgepole pine is a good example of how selective logging can be employed to the benefit of timber productivity and other resources. Western larch and other species were left, and just the dead lodgepole pine removed.

FOREST RESPONSE:

The operation described is called salvage logging Salvage is used where mortality has occurred and timber can be harvested while still allowing for accomplishment of other land management and

resource objectives. When evaluating treatment options for these areas, silviculturists look at the ability to manage the trees remaining after the salvage harvest entry, and the effect of the entry on them. When the remaining stand is not manageable or would suffer damage rendering the stand unmanageable, a salvage regeneration harvest, such as a clearcut, would occur. In the case cited above, a manageable stand component remained after the salvage, so a regeneration harvest was not necessary.

COMMENT NO. 63: Uncritical, wholesale switching to uneven-aged management could significantly reduce the productivity of the Forest and result in lower harvest levels.

FOREST RESPONSE:

This is true, which is why silviculturists, pest management specialists, and functional resource specialists worked together to form the new approach to uneven-aged management. A hard and critical look was given to uneven-aged management and where it could be applied successfully in a biologically and ecologically sound manner. On a per-acre basis, lower yields will occur for uneven-aged management than could be expected with the use of even-aged practices The yield differences will be least in the ponderosa pine working group where uneven-aged management makes the most sense and is most in line with the silvics of the tree species concerned. In the associated and lodgepole pine working groups, per acre yields may be as much as 20 percent lower using uneven-aged management. Use of uneven-aged management is just another opportunity cost in accomplishing the resource objective called for in the Forest Plan. Overall impacts will not be great, however, due to the relatively limited acres upon which uneven-aged management will be implemented. Refer to Chapter IV, Appendices B and K of the FEIS, and Chapter 4 of the Plan.

COMMENT NO. 64: The Forest should consider a much broader use of uneven-aged management to preserve site productivity.

FOREST RESPONSE:

We know of nothing to indicate that uneven-aged management practices can or will better protect or preserve site productivity. In fact, use of uneven-aged management will take extra care, planning, and monitoring to ensure damage does not occur. Repeated cutting cycles result in more entries on a given piece of ground and increased chance for damage to site productivity. See the Forest-wide Standards and Guidelines section in Chapter 4 of the Plan for use of uneven-aged management.

COMMENT NO. 65: What landtypes have been singled out as requiring uneven-aged management?

FOREST RESPONSE:

The determination of the application of uneven-aged management was accomplished through "objective-driven silviculture," rather than by landtypes. The resource specialists determined where and how much uneven-aged management would best meet resource objectives as shown in the Forest Plan, Chapter 4. On the Forest, uneven-aged management will be most successful in the ponderosa pine and mixed conifer plant associations, and on the flatter ground and less steep slopes.

COMMENT NO 66: Use uneven-aged management on the grass-tree mosaic lands

FOREST RESPONSE:

The grass-tree mosaic (GTM) lands would certainly be prime candidates for the use of uneven-aged management given their sensitive and critical nature The GTM lands have exceptionally high values for wildlife, aesthetics, and watershed, while timber values are generally low. It should be pointed out that timber harvest on the GTM lands is not scheduled It will occur only if needed to meet resource objectives for wildlife. One test of harvest methods in GTM is planned for the Horseshoe Ridge Roadless Area under the "sunset" strategy concept See Management Area C8 in Chapter 4 of the Forest Plan for details of the concept.

REFORESTATION

COMMENT NO. 67 The Plan should disclose the cost of regeneration

FOREST RESPONSE:

The costs of both natural and artificial regeneration and associated cultural practices can be found in FEIS Appendix B, Section IV.

COMMENT NO. 68: There is doubt that harvested lands, particularly clearcuts, can be adequately restocked. Part of this stems from biological/physical constraints and part from skepticism that adequate funding will be available.

FOREST RESPONSE:

The Umatilla NF has been regenerating harvested stands for the past 30 years. For the most part, the record has been successful. Failures in planting have occurred, but most areas have succeeded naturally over a 10- to 15-year period. Past failures resulted from the application of improper harvesting methods, harvesting on what is now unsuitable land, poor tree storage and handling, animal damage, and natural climatic problems such as drought. In the past decade, all of the above factors under man's control have been remedied Increasing reforestation success has come from increasing knowledge and training and better application of each, improved seedling planting and animal damage technology, and improved reforestation practices administration

The reforestation record for the Forest over the past 7 years has been added to Chapter III of the FEIS Further standards regarding minimum acceptable stocking and other reforestation issues have been added to the Forest-wide Standards and Guidelines in Chapter 4 of the Plan and Appendix D of the FEIS.

Clearcutting is restricted to where the practice is the optimum method consistent with resource objectives, and to landtypes and sites where past practices have proven it can be applied successfully (see Appendix K of the FEIS)

COMMENT NO. 69: The Plan should be more specific about the types of animal damage control measures that will be implemented Clearcutting increases gophers which reduce reforestation successes.

FOREST RESPONSE:

Further information on anticipated animal damage control measures has been added to Chapter III of the FEIS. Pocket gophers and other organisms respond to changes in their environment. Gophers will respond favorably to events that enhance their habitat, such as those that stimulate the production of herbaceous plant growth upon which they feed. Any activity that opens the forest canopy and provides light to the forest floor will do this. Observations of past partial cutting harvests show positive responses by gopher populations in the area. Clearcutting alone does not increase gophers Gopher damage surveys are a part of reforestation surveys done to monitor plantations When unacceptable gopher populations and damage are detected, gopher control measures are implemented before damage results in reforestation failure. Less than half of the acres harvested ever receive animal damage control treatment The principal control measure used by the Forest for gophers is below-ground poison baiting.

COMMENT NO. 70: Reforestation practices tend toward monocultures The percentage of each species planted rarely resembles the percentage of the species in natural stands.

FOREST RESPONSE:

The mix of species restocked on a harvest unit reflects both the biology and ecology and the management objectives of the site. In the Plan a strong bias exists toward vegetative and species diversity and away from monoculture. Diverse forests are more productive and freer from insect and disease problems A bias also exists in the Plan to return the species composition of the Forest to that

which existed naturally before the arrival of European man (to that which is ecologically natural). In the case of the Forest, greater emphasis will be on stocking of ponderosa pine, western larch, and lodgepole pine, and less grand fir, subalpine fir, and Engelmann spruce. See Chapters II and IV, Timber sections, in the FEIS.

Silviculturists use plant community guides developed by ecologists to assist them in determining the vegetative potential of a site, and to determine what species are best ecologically adapted for the site Quite often, the existing vegetation is not the best-adapted for the site due to the influence of the exclusion of natural fire and past selective logging practices Once the desired mix of species is determined, achieving it is done by the planting of one to three desirable species per site and by the natural seeding-in of species from the adjacent stand. The silviculturist has analyzed the adjacent stand and knows what species can be expected to seed-in over the next several years.

NATURAL REGENERATION

COMMENT NO. 71: It is unclear when natural regeneration will be used, and by what standard success will be measured, regarding time to successfully regenerate.

FOREST RESPONSE:

The Forest-wide Standards and Guidelines for timber have been revised and now include a much more thorough discussion on natural regeneration. They are found in Chapter 4 of the Plan and in Appendix D of the FEIS. Briefly, natural regeneration is the preferred regeneration method Forest-wide where compatible with the management area and resource objectives for a specific site, when suitable seed trees exist, and where adequate site preparation can be accomplished to regenerate the desired species.

Time for stocking with natural regeneration is easily confused with time to stock a man-created opening. The NFMA requirements apply to these created openings Natural regeneration can be used where NFMA openings do not exist; such is the case of a shelterwood, which is not an opening until the trees left for seed and shade are removed The guidelines for natural regeneration stocking are subordinate to the NFMA requirements. For example, in a clearcut which is an opening, NFMA rules would apply and it should be stocked in 5 years whether regenerated by natural or artificial methods. A shelterwood, which is not an opening, could be regenerated quickly with planting; or the manager could choose to allow nature more time to restock the area.

PONDEROSA PINE MANAGEMENT

COMMENT NO. 72: Ponderosa pine is a valuable species from an economic, wildlife, and aesthetic perspective. Due to past preferential harvesting practices, the inventory of ponderosa pine on the Forest is declining. Ponderosa pine is free from many of the pest problems that plague other species such as Douglas-fir and grand fir. What is being done to ensure the production of high quality, large-sized pine in the future?

FOREST RESPONSE:

As pointed out in the DEIS, the standing board-foot inventory of ponderosa pine has declined from 27.6 percent of the total in 1958 to 16 percent of the total in 1981. Sales containing significant pine volume are highly sought after, while those without pine volume sometimes go unpurchased (See FEIS, Chapters II & III). Ponderosa pine also has many other intrinsic values such as for wildlife, aesthetics, and diversity. The past management practices have lead to an increase in the amount of grand fir and Engelmann spruce, lead to a decline in ponderosa pine, and lead to an increase in the insect and disease problems on the Forest.

Between the draft and final, forest managers have developed new strategies to deal with the pine management question (refer to Chapter 4 of the Plan and Appendices D and K of the FEIS). Whereas in the draft, even-aged methods such as clearcutting and shelterwood were favored, in the final Plan a switch to uneven-aged management of the Ponderosa Pine Working Group is planned This is a change from the past selective practices that were largely concerned with removing high valued pine

volume while demonstrating little concern for future supplies. Planned treatments of all age and size classes in a stand will create the desired stand structure of several age and size classes. Uneven-aged management takes advantage of the natural tendency of ponderosa pine to form uneven-aged stand structure. Existing small-sized diameter classes are cultured and tended until they reach the desired size Under single tree selection uneven-aged management methods, pine will be grown until it reaches a diameter of 24 inches in visual and riparian zones, and 20 inches in other management emphasis areas. Cultural treatments such as precommercial thinning and pruning are options for producing clear, high quality wood products

In other working groups, ponderosa pine will be favored where it is ecologically conducive to do so. The mix of species will be shifted back to those found in natural stands before the arrival of European man. While a rich mix of species will be found, ponderosa pine will be more prevalent, and grand fir and spruce will be less so. A mix of even- and uneven-aged practices will be used to accomplish the change, depending on specific site conditions and management objectives for the area Regeneration and cultural practices such as precommercial thinning will be designed to create the desired species composition of the forest.

While the long-range outlook is for more ponderosa pine to be available for harvest, the existing decline in the pine inventory cannot be made up quickly. Uneven-aged management practices will help by conserving advanced-growth trees in the pole and smaller size classes, allowing them to grow into sawtimber size faster than if the site had been regenerated with even-aged practices. Still, the amount of ponderosa pine available for the wood products industry will likely continue to decline in the upcoming decades.

TIMBER IMPROVEMENT AND GENETICS

EARNED HARVEST EFFECTS/GENETIC GAIN ESTIMATES

COMMENT NO. 73: The Forest claims a 10 percent increase in timber production as a result of planting genetically improved stock. The Forest Service has no baseline information from which to estimate whether such gain effects are attainable, and may be overestimating the benefits of utilizing such stock.

FOREST RESPONSE:

In the upcoming decades, reforestation seed will be provided by the Forest tree improvement program. This seed will originate primarily from three sources· selected parent trees in the wild, untested seed orchards, and tested seed orchards. (Seed orchard genetic material is tested in evaluation plantations.) Each of the three seed sources represents an increased level of intensity in terms of genetic gain, as well as the investment required to achieve the genetic gain For each species and geographic/elevational area (breeding zone) occurring on the Forest, the appropriate level of genetic investment has been guided by the size of the commercial forest land base, the estimated number of acres to be reforested per decade, and the average site productivity of the breeding zone (Umatilla National Forest Tree Improvement Plan 1985).

The draft and final Plans project a 10 percent gain in yield/acre for the planting of genetic stock. The projection is a conservative estimate of genetic gain for the Forest as a whole since, for each acre planted, the actual realized gain percent will vary depending on the primary seed source used in reforestation; genetic gain on acres planted with seed from tested seed orchards is estimated to be approximately three times that obtained from plantations established with stock originating from wild stand selections The genetic gain differences are largely a result of greater selection intensity in tested seed orchards – data gathered from field trials (evaluation plantations) are used to rank the performance of genetic stock in terms of their growth and survival. The poorer performing materials are then removed from the orchard, leaving only the very best trees to inter-breed and produce seed for reforestation.

Data from breeding programs similar to the Forest's show that genetic gains on the order of 10 percent are well within reach, and in fact are quite conservative (Theisen 1986). For instance, volume gains of 30 percent and greater have been obtained from tree improvement programs in the South and elsewhere (Nikles 1970; Snyder 1973; Theisen 1980). In addition to growth traits, numerous other characteristics are amenable to genetic improvement but have not been incorporated in the FORPLAN model Desirable traits include stem straightness and limb-quality characteristics, wood quality, pest

resistance, and adaptability to adverse environments. Monitoring of yield improvements will determine if Forest projections are accurate; managed yield tables and FORPLAN outputs will be revised and updated in the future as better information becomes available

COMMENT NO. 74: Genetic gain is exaggerated because the Forest Tree Improvement Program includes only two species.

FOREST RESPONSE:

The Forest Tree Improvement Plan provides methods of seed procurement for all species being reforested; however, species receiving major emphasis in the Tree Improvement Program (i e , those established in seed orchards and evaluation plantations) are those planted extensively across the Forest and, therefore, warrant the investment necessary for an intensive breeding program. These species include ponderosa pine, western larch, and Douglas-fir. Reforestation seed for minor species and breeding zones will be obtained from selected parent trees. Again, based on the best data available, it is our professional opinion that a 10 percent yield improvement from genetics is a conservative average for all species and breeding zones occurring on the Forest.

COMMENT NO. 75: Because genetically improved stock is currently not available, the Forest Plan violates NFMA when it claims an earned harvest effect from genetics. Genetic increases in the FORPLAN model should be delayed at least until the second decade.

FOREST RESPONSE:

The earned harvest effect (EHE) is the difference between the timber output with an intensive level of silvicultural treatment (e g , genetic tree improvement) and the output without the silvicultural treatment (base level). Calculation of the EHE for genetics is described in Appendix A of the Forest Plan.

The decision was made to conservatively estimate genetic gain at 10 percent, and apply the gain figure to all planted acres in all decades, despite the fact that throughout the first decade and most of the second, the primary source of reforestation seed would be from mass selections (trees in natural stands) This decision was largely a result of difficulties with the FORPLAN model. The alternative would have been to use different managed yield tables with increasing amounts of genetic gain (up to a maximum of 30 percent for stock from tested seed orchards) as planting stock from seed orchards became available in future decades. If projected gains are inaccurate, the Forest allowable sale quantity will be appropriately adjusted.

COMMENT NO. 76: What if the tree improvement program can't be carried out due to a lack of funding?

FOREST RESPONSE:

Most major up-front costs of conducting a first-generation tree improvement program, including expenditures on tree selection and seed orchard development, have already been incurred on the Forest. As a consequence, the Forest genetics program could remain viable, even if funding were to drop to maintenance levels. In addition, Forest Plans are to be reviewed periodically and revised at least every 10-15 years to analyze and update management and yield assumptions. Therefore, even if funding levels decreased to the point where the tree improvement program was not operable and projected yields could not be attained, adjustments to the Plan would be made accordingly. Finally, the genetic improvement of forest trees has the unique characteristic of "permanence " That is, investments in a breeding program need not be repeated during each rotation to be most effective, unlike fertilization, competition control, or site preparation.

GENETIC DIVERSITY

COMMENT NO. 77: A concern was raised over the risk of relying on a narrow genetic pool in terms of vulnerability to disasters.

FOREST RESPONSE:

Because forest tree species are long-lived and occupy diverse and heterogeneous environments, seed transfer guidelines and forest tree breeding strategies must (1) maintain or enhance genetic variability, and (2) assure the adaptation of improved stock to a wide variety of planting sites Forest genetic strategies differ markedly from those used in agronomic crop breeding, where plants grow in highly controlled environments and are bred for narrow, but exceptional genetic diversity. Unlike crop breeders, tree geneticists cannot generate new varieties annually.

A number of genetic, as well as silvicultural activities are conducted in the region and on the Forest to maintain or enhance locally adapted genetic variation (Theisen 1980). Activities include, but are not limited to, the following:

1. *Seed, nursery stock, cuttings, etc , are certified as to their geographic and elevational source Tree seed zones and breeding zones have been established to guide forest managers in the use and transfer of these materials*

2. *Minimum population base has been established to ensure that reforestation seed lots represent a broad genetic base. The timeframe and locality of using seed from seed stands, seed production areas, and seed orchards are limited to avoid the planting of large continuous areas with the same seed source.*

3 *To prevent the loss of genetic base in seed activities and nursery stock production, seed and seedling sizing is not done Seed stratification techniques are being implemented to obtain maximum and uniform germination*

4. *Natural regeneration is encouraged, even on areas planted Higher stocking levels and natural mixture of species are recommended.*

5. *Large breeding populations of local origin are maintained in the tree improvement program Minimum regional standards have been established and implemented on the Forest Seed orchards are located in or as near as possible to the breeding zone they serve. Pollen from surrounding natural stands enhances genetic diversity.*

6. *In intensive breeding programs, where large numbers of acres are reforested annually, plant materials are evaluated on a broad range of sites (evaluation plantations) to obtain a proper measure of general adaptability.*

7. *Poor genetic (dysgenic) practices are avoided in stand tending. careful control of diameter limit cutting as well as species preference cutting is practiced. Natural selection is allowed to operate and identify trees that are best adapted to the site (regardless of whether they are planted or natural).*

8. *Program activity reviews are conducted periodically to ensure that the region's goal of gene pool conservation through gene pool use is being implemented.*

9. *Forest genetics research is encouraged to more intelligently address the needs of gene pool conservation. The USDA Forest Service has recently established a National Isozyme Laboratory (Placerville, CA) to serve the national forests The new laboratory will process seeds and tree samples to provide forest personnel with genetic information regarding relative amounts and geographic patterns of natural variation. In addition, tests at the laboratory will give forest managers the means for evaluating the genetic consequences of stand management practices.*

TIMBER PRACTICES IN RIPARIAN AREAS

COMMENT NO. 78: The DEIS and Plan do not include timber management practices that afford enough protection to riparian areas.

FOREST RESPONSE:

The practice of timber management in riparian zones has been clarified and changed between the draft and final; the most notable addition is the expanded use of uneven-aged management practices proposed for the Forest. Refer to Forest-wide Standards and Guidelines for Timber and Riparian/Fish and the Management Areas C5 and C6 riparian, in Chapter 4 of the Plan and Appendices D and K of the FEIS.

The new emphasis on use of uneven-aged management has provided some change to management direction for riparian zones. Riparian protection is a primary purpose in Management Areas C5, C6, C7, and F1, F2, F4, F4A, and F5, and in the Forest-wide Standards and Guidelines; descriptions can be found in Chapter 4 of the Plan and Appendix D of the FEIS The desired future condition of riparian zones is a near natural condition with continuous or nearly continuous high forest canopy. No scheduled timber harvest is planned in the riparian zones in areas C7, F1, F2, F4, F4A, F5, and others; this amounts to an unharvested buffer along streams in these areas In Management Areas C5 and C6, timber harvest is scheduled, when compatible with riparian and other resource objectives Within 50 feet of the stream, single tree selection techniques are the preferred harvest methods.

INSECT AND DISEASE CONTROL

COMMENT NO. 79: The Plan should enumerate and discuss pathogens affecting the Forest, and disclose how it intends to prevent or minimize losses.

FOREST RESPONSE:

Discussions on Forest pest management considerations are found in Chapters III and IV of the FEIS and Chapters 3 and 4 of the Plan. Chapter III of the FEIS lists and discusses the organisms found, while the Timber and Pest Management sections in the Forest-wide Standards and Guidelines in Chapter 4 of the Plan give specific directions. An integrated pest management approach is being used to deal on a holistic level with the many insect and pathogen pests found on the Forest. Long-term answers are found by favoring species that would have occurred in the Forest in the absence of European man--namely, ponderosa pine, western larch, lodgepole pine, and Douglas-fir. This is implemented through the choice of silvicultural systems and species favored in regeneration practices. Short-term responses may necessitate the sanitation and salvage of pest infested material, or the use of direct control measures such as the recent aerial spray program targeted against western spruce budworm.

COMMENT NO. 80. The Forest is beset with many insect and disease problems, as evidenced by the epidemics of mountain pine beetle, western spruce budworm, and tussock moth during the past couple of decades. Root rots are becoming recognized in the Blue Mountains as a serious situation for which there is no cost-effective method of control The Umatilla should have a fully integrated pest management program which includes a full array of control measures including the use of any chemicals registered in the States of Oregon or Washington

FOREST RESPONSE:

Every acre of the Forest is under the strategy of integrated forest pest management. Please refer to the Forest-wide Standards and Guidelines and Management Areas sections of Chapter 4 of the Plan, as well as to Chapters III and IV of the FEIS Included is guidance on how the strategy should be applied to each management area.

The only long-term solution to many of the Forest pest problems is through vegetative manipulations using silvicultural practices or prescribed fire Each practice affects species composition and stand structure in a way that creates conditions unfavorable to the pests. Other shorter-term strategies included in integrated pest management are biological, mechanical, manual, or chemical treatments.

The appropriate integrated pest management strategy and method(s) will be selected and addressed in response to specific problems in an environmental analysis, and documented in the appropriate NEPA document Use of chemicals is expected to be the last-resort practice The Forest will follow the principles spelled out in "Managing Competing and Unwanted Vegetation" (USDA Forest Service, PNW Region 1988).

The problem of root rots is easily and cost-effectively addressed using silvicultural practices that permit control over species composition. On the other hand, partial cutting or selective logging will serve to compound and worsen the root rot problem Pathologists estimate that about a 30 percent reduction in cubic foot yields would occur from root rots under a selective harvest system in associated species forest types.

COMMENT NO 81: Reserved areas such as wilderness areas, roadless areas, dedicated old growth, and visual corridors will become areas for insect infestations to begin in. They could then easily spread to adjacent managed stands causing a reduction in future yields. The current defoliation of young grand fir stands by western spruce budworm is a graphic example.

FOREST RESPONSE:

All management areas contain integrated pest management strategies, including monitoring requirements. Refer to management area descriptions in Chapter 4 of the Plan and Appendix D of the FEIS. The Forest is monitored yearly using pheromone trapping, branch counts, and aerial detection to spot early buildups before insect pests become epidemic The appropriate set of control and suppression strategies is then formulated to deal with the problem Mitigation techniques can be used on a site-specific basis to reduce the risks of outbreaks and of adverse effects Unfortunately, the only long-range solution is through vegetative manipulations that affect species and stand structure Full implementation will take decades due to other resource constraints The example of the young grand fir stand is a good one Currently the short-term response to budworm is chemical or biological insecticides. In the long term, these extensive stands of grand fir, which became established primarily because of the absence of natural fire, will be converted to stands of ponderosa pine, western larch, and lodgepole pine which are not susceptible to the ravages of the budworm Further discussion of insects and diseases is found in FEIS Chapters III and IV.

GENERAL FOREST PRACTICES/CONCERNS

COMMENT NO 82: More salvage logging should be done, including a Forest-wide program to capture material currently left to rot next to new clearcuts. Such harvesting should be allowed regardless of land allocation and would go a long way toward mitigating perceived conflicts between timber harvest and other resource objectives The results of salvage logging are environmentally and visually less objectionable than other silvicultural practices

FOREST RESPONSE:

Salvage logging is a valuable forest management tool It can capture timber value that would otherwise be lost, and provide another source of logs for mills, possibly extending the inventory of green sawlogs. The intensity of salvage logging is based on the severity of the cause of the mortality and is often not as noticeable to the public as other forms of forest treatment

Salvage logging can be done in any allocation on the Forest with the exception of wilderness, research natural areas, and that area of Mill Creek that will remain undeveloped. However, for allocations that have no scheduled harvest, salvage will be done only when needed to benefit other resource objectives.

There are drawbacks to salvage logging. A program of Forest-wide salvaging would mean many repeated entries over the same ground, likely causing a decline in stand vigor and site productivity due to the impacts of felling and yarding as well as from soil compaction. Mortality is not predictable or constant; therefore, it would be impossible to build a reliable timber sale program on salvage logging. Salvage logging rarely does anything to improve the condition or growth of the stand receiving it Long-term sustained-yield would drop drastically compared to that in stands under more intensive forest practices.

While it is true that much mortality does not get tangibly utilized, this is not necessarily bad. Dead and down material is invaluable for fish, wildlife, ecosystems, and long-term soil productivity needs.

COMMENT NO. 83: What are the relationships between old growth and silvicultural practices? Should the Forest manage for replacement old growth using intensive silvicultural practices, and what are the plans for the stands between rotation age and old growth?

FOREST RESPONSE:

Old growth is more than a function of tree size and age It is a condition of the ecosystem. The Plan now reserves old growth in dedicated areas in Management Area C1 and in allocations with no scheduled harvest. In some others such as riparian areas and viewsheds, the conversion period from existing stands to regenerated stands is extremely long – in excess of 180 years Some of these stands will qualify as old growth In the Lodgepole Working Group few areas meet old growth definitions due to the serious impacts of the mountain pine beetle The species is also short lived. In this situation, the Forest will manage for old growth stands using silvicultural tools (see Management Area C2).

As for replacement old growth, should a dedicated area be destroyed, the most ecologically and biologically acceptable replacement unit in close proximity will be substituted. Old growth levels retained on the Forest from both dedicated and other sources are well in excess of minimum requirements for wildlife This provides insurance in the event a dedicated area is destroyed and a suitable replacement does not exist One concern is that quality replacement habitats will not be available for lost dedicated units in general forest areas having allocation with scheduled timber harvest. Silvicultural practices may have to be used in potential replacement stands to "speed up" and enhance old growth characteristics.

The stands between rotation age and old growth in areas scheduled for timber harvest will be converted over time to managed stands, unless needed as replacements or in the future are placed in other allocations (refer to wildlife standards and guidelines in Appendix D of the FEIS and Chapter 4 of the Plan)

COMMENT NO 84: The practice of allowing any amount of unregulated harvest in addition to regulated harvest means that the Forest is always cutting beyond sustained-yield levels

FOREST RESPONSE:

The terms regulated and unregulated are no longer used Instead, the concepts of scheduled and unscheduled harvests are now used See the Glossary in the Plan for definitions of terms. Unscheduled harvests come from lands which have no scheduled timber harvest and are not included in sustained-yield calculations; therefore, they have no impact on long-term sustained-yield In addition, the practice will be used only when it benefits the resources and meets objectives of the land allocation.

COMMENT NO. 85: The Forest failed to display a range of silvicultural harvesting methods and their economic and biological consequences.

FOREST RESPONSE:

The range of silvicultural methods has been expanded between the draft and the final to include uneven-aged methods. All scientifically recognized methods are included or considered in the Plan Refer to Appendices D and K of the FEIS and the Timber section in Chapter 4 of the Forest Plan. Biological and economic consequences have been updated with the addition of uneven-aged management, and are discussed in Chapter IV of the FEIS

COMMENT NO. 86: What if intensive silvicultural practices aren't as successful as envisioned or cannot be conducted due to a lack of funding?

FOREST RESPONSE.

The monitoring plan in Chapter 5 of the Forest Plan contains a review of key cultural activities If the accomplishment deviates from the amount set, the Forest Plan will be reviewed, and amended or revised, if necessary, by the process outlined in Chapter 5 In addition, plans are scheduled to be revised every 10, or at least every 15 years. At those times, the validity of management and yield assumptions will be analyzed and updated if needed, and new allowable sale quantity and long-term sustained-yield calculations made. To assist in this process, results from a new Integrated Resources Inventory and other new information will be available Included will be data from permanent growth and yield plots in managed stands If intensive cultural activities are not funded, the inventory will reflect the lower-than-expected growth rates, and adjustments can be made.

COMMENT NO. 87: I strongly urge you to revise timber harvest practices in the vicinities of meadows and adjacent areas that provide important elk habitat

FOREST RESPONSE:

The Plan provides protection for the special and unique ecosystems and habitats found in and near meadows. Forest-wide Standards and Guidelines for wildlife and timber contain directive protection wording (see Chapter 4 of the Plan and Appendix D of the FEIS). One specific addition is the use of uneven-aged management practices to protect such sensitive areas

COMMENT NO. 88: Appendix K, and the DEIS and draft Plan, indicated that even-aged management will be practiced over most of the Forest. Why is it necessary to prescribe treatments for individual sale areas in these documents? There is little indication that silvicultural practices will be tailored to site-specific conditions

FOREST RESPONSE:

The Forest planning process is a programmatic FEIS, and not intended to be site-specific In the FEIS, an estimate of expected silvicultural practices by management area is used to test and set possible forest management direction and determine outputs and effects of different alternatives and the final Plan Appendices D and K, and the Forest-wide Standards and Guidelines for Timber in Chapter 4 of the Plan, have been revised between the draft and final to clearly state that determination of the harvest method will be on a site-specific basis, identified in prescriptions written or approved by a certified silviculturist, included in the environmental analysis prepared by an interdisciplinary team, and approved by the appropriate line officer.

COMMENT NO. 89: The Forest could show its enthusiastic enforcement of NFMA by requiring that each stand be surveyed to ensure that its growth has culminated, as required by section (6)(m)(1).

FOREST RESPONSE:

The requirement for culmination of mean annual increment is found in the Forest-wide Standards and Guidelines in Appendix D of the FEIS and Chapter 4 of the Plan. For further emphasis, the requirement has also been added to Appendix K of the FEIS Culmination of mean annual growth is one characteristic that is analyzed in the preparation of a site-specific silvicultural prescription.

COMMENT NO. 90: The use of fire as a silvicultural tool should be encouraged.

FOREST RESPONSE:

The use of fire as a silvicultural tool was envisioned in the DEIS, but references to it were difficult to find. It has now been better emphasized by additions to the Forest-wide Standards and Guidelines and management area direction in Chapter 4 of the Plan and Appendix D of the FEIS Such use would go beyond the traditional burning of slash in regeneration harvest units for site preparation, and would include underburning of managed stands to reduce fuel hazards, stimulate forage production on big game winter ranges and other areas, and increase accessibility for wildlife and livestock

COMMENT NO. 91: The agency should provide the public with a discussion of how the Plan would guide the Forest in managing the land after wildfires that significantly reduce standing volumes of timber.

FOREST RESPONSE:

The Forest identified two types of changes in the Plan regarding wildfires. In Appendix A of the Forest Plan (Calculation of Earned Harvest), occurrences that may trigger adjustments were listed. On covering wildfires it states, "When agents such as fire, insects, or disease affect a cumulative total land area greater than 5 percent of the acres classified as biologically suitable, a new allowable sale quantity will be calculated using the Forest model and FORPLAN, and the Forest Plan will be amended to portray the new ASQ."

In the monitoring plan, in Chapter 5 of the Plan, the Fire section states that if a departure of more than 20 percent from estimated acres were burned by wildfire, the Fire Action Plan and Forest Plan would be reviewed for possible adjustment. Procedures for changes are also described in Chapter 5

RANGE

MANAGEMENT STANDARDS AND GUIDELINES

COMMENT NO 1: Livestock grazing on national forest lands is an inappropriate use of the resource.

FOREST RESPONSE:

Livestock grazing has long been recognized as a valid use of National Forest System lands. Section 1 of the Multiple-Use Sustained-Yield Act of 1960 states: "It is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes." Section 2 continues, "The Secretary of Agriculture is authorized and directed to develop and administer the renewable surface resources of the national forests for multiple-use and sustained-yield of the several products and services obtained therefrom." Section 6 of the National Forest Management Act of 1976 requires the Secretary of Agriculture to develop land management plans for units of the National Forest System that "provide for multiple use and sustained yield of the products and services obtained therefrom and, in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness."

COMMENT NO. 2: The final Plan should clearly specify the management standards and guidelines that will be applied to range management practices on the Forest.

FOREST RESPONSE:

The updated Forest-wide Standards and Guidelines are detailed in Chapter 4 of the Forest Plan, and Appendix D of the FEIS. Forage utilization standards for riparian, upland, and transitory range areas and a discussion of the content of allotment management plans have been added.

COMMENT NO. 3: Standards and Guidelines numbers 4 and 8, under Range on page 4-46, are not cost-effective and not enforceable.

FOREST RESPONSE:

Forest-wide Standards and Guidelines concerning allotment management plans and annual operating plans have been updated and clarified as stated in the preceding response. As set forth in Forest Service Manual Section 2230, the allotment management plan is attached to and made a part of the permittee's grazing permit; adherence to the terms and conditions of the allotment management plan is required according to the clauses of the grazing permit, and is quite enforceable. Administration of each individual allotment management plan can vary tremendously from one allotment to another, depending upon many factors, and even upon the yearly climatic conditions. Cost efficiency is measured by the needs and results of implementing improved management systems on individual allotments, rather than by the quality or quantity of range administration.

COMMENT NO. 4: What is the Forest goal for range management? Is it increased AUM's, or good soil, vegetation, and water tables?

The Range goal on page 4-46 begins, "Provide forage for livestock and wildlife to promote the economic stability of dependent livestock producers." Why does the economic stability of livestock producers determine what are suitable food requirements for wildlife?

FOREST RESPONSE:

The goal was really two goals, and was not stated clearly. Providing forage for both wildlife and livestock was one part of the Forest goal, while a second part was to promote local economic stability. The Forest goal for management of the rangeland vegetation resource, as revised in Chapter 4 of the Forest Plan, and Appendix D of the FEIS, is: To manage the forage resources for an upward vegetative trend in areas in less than "fair" condition and an upward or stable trend for areas in "fair" or better condition, while

providing for forage productivity and making suitable range available for livestock grazing. Increase the level of forage production where cost efficient and consistent with other resource goals.

COMMENT NO. 5: In the Forest-wide Standards and Guidelines, a standard should relate to a maximum allowable reduction in real vegetative productivity of the plant community typical of the site

FOREST RESPONSE:

The revised Forest-wide Standards and Guidelines (Range section) detail allowable utilization levels of available forage in riparian areas, upland areas, and areas of transitory range.

COMMENT NO. 6: The Forest-wide Standards and Guidelines should specifically describe how the Forest Service will reduce conflicts between grazing and other public resources. Why is there no decrease in allotments in those areas that have some localized conflicts?

FOREST RESPONSE:

Results from each step of the entire planning process are used to reduce and resolve conflicts. Forest-wide Standards and Guidelines for each resource include management requirements and other important direction applicable to lands across the Forest. Management area directions apply more specific prescriptions to specifically-identified land areas Both are designed to reduce or minimize conflicts In addition to standards and guidelines and management area direction, the mitigation measures found in Chapter IV of the FEIS are also designed to resolve conflicts.

Range allotment management plans are another tool for reducing conflicts. They specify objectives for proper management of the resources, under the umbrella of the Forest Plan, on each range allotment (a designated area of land where grazing of livestock—kind, number, and season—is authorized by permit) They also identify grazing systems and improvements needed to meet the stated objectives, coordination requirements, and monitoring needs. If conflicts occur on the allotment, usually several methods are available to resolve the resource concerns One is to change or decrease the permitted livestock use (through grazing permit action). Other options available to the resource manager might be to: (1) Change the grazing system in use, (2) change the season of use, (3) require different livestock handling or movement techniques, or (4) modify livestock herd or band size In some cases, the other resources may be modified. The Range section of Chapter IV of the FEIS discusses available mitigation measures.

GRAZING - GENERAL/MANAGEMENT

COMMENT NO. 7: Conflicts between livestock and semi-primitive recreation, and an effective program for mitigation of these conflicts, were not adequately discussed in the Plan.

FOREST RESPONSE:

Effects of potential conflicts between livestock and developed and dispersed recreation are discussed in the Recreation section of Chapter IV of the FEIS The interdisciplinary team determined early in the planning process that conflicts between recreation and livestock grazing were possible on a site-specific basis but were not generally a major problem Forest-wide. A few of the more important mitigation measures have been listed. Management plans for individual allotments identify known areas of conflict between livestock and recreationists where they do exist, and detail management efforts to resolve the conflict.

COMMENT NO. 8: In the Environmental Consequences section of the DEIS, the discussion of the effects of grazing on other resources is extremely scanty and inadequate Data included in the draft Plan is insufficient to assess the effects of or to justify any increase in grazing. The impacts on native animals and native plant communities, and on sensitive plant species, are scarcely mentioned, and there is no mention of how effects on native vegetation will be monitored or mitigated, other than with the extremely vague range

condition monitoring program. The Forest must address the cumulative effects, by alternative, of cattle grazing both on and off the Forest.

FOREST RESPONSE:

Much of the discussion of the effects you mention is found in the Range section (Range Administration and Livestock Grazing) of FEIS Chapter IV. Further discussions can be found in several other sections, including Unique Ecosystems, Forests, Noxious Weeds, and Sensitive Animals and Plants. However, the results of interactions between any and all resources may not be detailed in Chapter IV While all resource interactions and consequences were analyzed during the planning process, NEPA requires that only those interactions termed "significant" be detailed in the planning document The Interdisciplinary Team determined which resource interactions were "significant." Some of the revised Forest-wide Standards and Guidelines under the Range section may clarify the allowable effects of livestock grazing on native plant communities. Requirements for proper management of sensitive plant species will be stated in the individual Species Management Guides.

The increase in AUM's in the Forest Plan is based on additional forage created as a result of past and expected timber harvest, as discussed in the Range sections of Chapters II and III Any changes in AUM's will be made at the allotment management planning level after site-specific data are considered. Displays for range condition acres and grazing systems used for individual range allotments have been added in Appendix A of the Forest Plan.

COMMENT NO. 9: Domestic grazing levels should be slightly reduced because other resource values cannot be adequately protected with higher levels of grazing.

FOREST RESPONSE:

About 60 percent of the forage used by domestic livestock has been made available as a result of past timber sale activity (transitory range). The level is expected to remain constant, based on current sale activity. Utilization of this resource is in conformance with other resource values and all requirements stated in the Forest Plan. Chapter IV of the FEIS discusses the environmental effects of livestock grazing. The objectives set forth in the allotment management plan are concerned with proper management of all resources in the allotment area. Monitoring needs and requirements are set forth in every plan to determine if objectives are being met within specified timeframes. Allotment management plans revised or rewritten in recent years also state possible solutions to implement if the objectives are not met in full (or if any other resource conflicts arise in the meantime) All resource values can be properly protected at designed grazing levels by following the terms and conditions set forth in all allotment management plans. Grazing permit actions can be (and have been) taken in those instances where terms and conditions are not followed or where resource conflicts cannot be solved in other ways

COMMENT NO. 10: Grazing should be limited to those areas and times of the year that minimize potential environmental damage Special interest areas—botanical, riparian, and research natural areas—require special protection from livestock grazing. The Forest should place higher priority on protecting the basic resources than on increasing livestock production. Livestock should be eliminated from some areas.

FOREST RESPONSE:

Again, within the scope of the Forest Plan, resource objectives are established for each range allotment in the allotment management plan; they can be met with proper allotment and permit administration. Any increase in AUM's will occur only after the allotment planning process determines that other resources will be adequately protected. Areas that are "key" or "critical" toward a possible resource conflict are usually highlighted, and special monitoring needs are established for these areas Special management considerations are stated for special interest areas such as you listed, in the Forest-wide Standards and Guidelines for such areas.

COMMENT NO. 11: The lack of an efficient method to accurately measure and manage the numbers of permitted livestock in big game habitat areas is an indication that timbering and grazing activities should be limited to more manageable levels. Livestock grazing should be curtailed or stopped entirely if and when conflicts with wildlife take place.

Forage competition, especially in winter, is not adequately addressed. Livestock grazing should be prohibited in wildlife winter range areas and GTM lands to minimize competition and to avoid transmission of disease organisms from livestock to wildlife

Cattle and sheep should be removed from all winter range by October 1 to preserve fall green up for big game use.

Forage is going to farmers and ranchers for their cattle rather than to wildlife Why are cattle being fed for 10 months out of the year? We hand-feed game, yet provide cattle all the feed they want.

FOREST RESPONSE:

Allotment management plans are built from (or changed to conform to) Forest Plan direction, including the Forest-wide Standards and Guidelines and the management area descriptions. Forest Plan direction, along with mitigation and monitoring, is designed to reduce or eliminate conflicts between resources. Allotment management plans list objectives for management of winter ranges within grazing allotments, and the grazing systems and seasons of use detailed there have proven to be an efficient method for managing permitted livestock Forest-wide Standards and Guidelines in the Range section in Appendix D of the FEIS list the forage utilization levels and other means to measure use by domestic livestock on all areas, including winter ranges. Grazing permit actions can be taken to reduce or eliminate conflicts, if needed; past experience has shown that changing the season of use has been effective in reducing big game and livestock conflicts

A discussion of forage availability and allocation is found in the Wildlife section of Chapter IV of the FEIS. Production figures indicate there is adequate forage produced on all winter ranges to meet the needs of both state management objective levels of deer and elk and the current levels of domestic livestock use The Analysis of the Management Situation shows that adequate forage would remain even if both big game and livestock numbers were increased. Refer to the issue statements in Chapter I and the environmental effects in Chapter IV of the FEIS for a discussion of the situation and potential conflicts. Potential conflicts of use on winter ranges are not a factor of too little forage but rather of the timing of use of the available forage. Grazing systems are designed to have adequate forage available during the periods of use by big game. For example, if the majority of big game use occurs on one winter range in the early to late fall, the grazing system is designed for livestock to use the winter range in the spring, thereby allowing for additional forage through regrowth during the summer growing period. The grazing system can be designed to allow for late summer cattle use if big game use of the winter range is predominantly in the late winter or early spring. Refer to management area directions (C3, C3A, and C8) in Appendix D of the FEIS or Chapter 4 of the Forest Plan for more specific management requirements on big game winter ranges

As discussed in the Range section of Chapter III of the FEIS, the numbers of livestock and season of grazing use are stated on grazing permits. The longest season of use for any grazing allotment on the Forest is 5 months (in one case, privately-owned land is fenced into the allotment and grazing occurs for an additional 5 weeks later in the fall). Most allotments have an on-date of about June 1 and an off-date in the last half of October; a majority of the cattle permitted for use on the Forest have been removed by the end of September. Any feeding of livestock takes place on the permittee's private lands.

COMMENT NO. 12: How can the impact to soils from grazing be the same for all alternatives when Alternative I results in a 61 percent increase in permitted AUM's over Alternative **A**, and Alternative **E** results in a 36 percent decrease over Alternative **A**?

FOREST RESPONSE:

*The discussion of the effects of livestock grazing on soil is found in the Soil section of Chapter IV of the FEIS. The wording is slightly different than shown here; it states, in part, that impacts to soils are relatively low and about the same for all alternatives It also states that soil compaction and displacement will probably be higher in alternatives with higher levels of grazing use and lower in alternatives with lower levels of grazing use. Localized areas are probably impacted about the same under each alternative. Alternative **E** is one with very little management control and therefore has a higher risk of localized soil impact. Soil compaction and displacement occur to a certain point, if at all, and then rarely increase beyond that point, even if additional livestock numbers concentrate in the area (Alternative **I**) or the animals spend additional time on the site (Alternative **E**)*

COMMENT NO. 13: Domestic sheep range should be isolated from bighorn range and planned reintroduction areas by a 5-mile buffer zone. On page IV-71, the DEIS states that increased grazing under certain alternatives may conflict with state plans for the reintroduction of bighorn sheep. Any attempt to increase domestic sheep range on the Forest at the expense of bighorn sheep reintroduction will be viewed by the Nez Perce Tribe as an abrogation of treaty rights.

FOREST RESPONSE:

The state plans detail proposed areas for reintroducing bighorn sheep into suitable range. Environmental analysis is conducted by the Forest (or by the state, in coordination with the Forest) in each case of proposed reintroduction or possible grazing allotment expansion toward suitable bighorn range The analysis assesses the possible effects on a case-by-case basis Past and current Forest policy is to maintain a minimum of a 1-mile buffer strip in such cases Factors such as topography, aspect, existing vegetation, and seasons of use by both animal species are used to determine how wide the buffer zone should be in each case. The Forest will continue to make these decisions on a project-specific basis, with full consideration of Treaty rights. The Forest policy has also been, and continues to be, that if the reintroductions are proposed in areas currently permitted for use by domestic sheep, permitted use will be allowed to continue. Livestock management actions, such as modifying the routing schedule for the band, can be used to reduce or eliminate contact between the two species. In cases where proposed introductions are not in grazing allotments, domestic sheep use would not be expanded into the suitable bighorn ranges.

COMMENT NO. 14: Grazing should be phased out of the Grande Ronde Wild and Scenic River area since it is of minor importance. There is certainly no rationale to expand future sheep allotments when you admit that there may be a conflict with deer.

FOREST RESPONSE.

There are no domestic sheep allotments located in the Umatilla National Forest portion of the Grande Ronde Wild and Scenic River area (or in the Wallowa-Whitman National Forest portion of the area directly across the river). There are no plans to expand the nearby North End transitory allotment (with permitted sheep use) into that area

COMMENT NO. 15: Grazing on the Forest which contributes to displacement of big game to privately-owned lands should be curtailed significantly.

FOREST RESPONSE:

Displacement of big game to private lands was identified as part of the big game issue and tracked through the entire planning process. The Desired Future Condition discussion for big game winter ranges (Management Areas C3, C3A, and C8 in FEIS Appendix D and also in Chapter 4 of the Forest Plan) states the Forest goal of managing so that wintering big game remain on public lands and the impacts to private lands are minimized The Management Area direction lists several tools (prescribed burning, seeding, and planting, for example) being used by land managers to accomplish this goal.

RANGE CONDITION

COMMENT NO. 16: What factors constitute "condition"? Is condition only suitability to act as forage for cattle, is it available biomass, or is it ecological condition? The Forest does not describe what constitutes "good," "fair," "poor," or "very poor" conditions

FOREST RESPONSE:

A discussion of condition has been added to the Range sections in Chapter III of the FEIS and Chapter 2 of the Forest Plan. In short, condition is a measure of the existing vegetation (both the kinds of species and the numbers of each), the litter and other soil surface cover, and the soil stability in relation to what would be the potential, natural condition in that plant community type. The condition class is a measure of what a site is producing in relation to what it is ecologically capable of producing. In general terms,

"excellent" is 81-100 percent of maximum production or species density and composition, "good" is 61-80 percent, "fair" is 41-60 percent, "poor" is 21-40 percent, and "very poor" is 20 percent or less of maximum production. Definitions have been added to the Glossary. See the Range sections of Chapter III of the FEIS or Chapter 2 of the Forest Plan for more detailed discussions.

COMMENT NO. 17: Are all winter range conflicts between big game and livestock (identified on pages III-28 and III-29 under Range Potential) "minor"? If past conflicts are resolved, how can 29 percent of the big game winter ranges still be classed as in "poor" condition when this is due basically to livestock overgrazing? What has been done to "upgrade" them to be only 29 percent "poor"? With existing Federal regulations, how can the Forest possibly justify livestock use of these "poor" ranges? No livestock should be permitted on any ranges not classified as "good" or better (especially riparian areas), unless it is to meet a specific wildlife goal.

The results of the 30 years of monitoring condition and trend referred to on page IV-52, paragraph 3, should be provided in the Final Plan. Assessment should be made of the expected impacts that the grazing levels of each alternative would have on overall condition and trend, and on riparian areas in particular.

FOREST RESPONSE:

A discussion of condition has been added to the Range sections in Chapter III of the FEIS and Chapter 2 of the Forest Plan. Discussions of grazing effects, by alternative, are found in several sections of Chapter IV of the FEIS, especially Wildlife and Big Game, Riparian and Fish Areas, and Rangelands.

Yes, current winter range conflicts between big game and livestock are "minor." Grazing areas and grazing use have been reduced (substantially, in many cases) from the levels common after the turn of the century. Range condition has improved substantially on the Forest since that era, and continues to improve. Transect readings over the last 5-10 years indicate much of the Forest has improved by nearly one condition class (from "fair" to "good" for example) just since the extensive range analysis coverage across the Forest in the early 1960's; however, fragile or ecologically-poor sites—such as scab rock outcroppings or steeply-sloped juniper shrublands—tend to recover slowly, largely because of low precipitation and/or poor soils. Many winter range areas contain some acreage of these community types. Poor conditions result from past overuse—from livestock, or untimely wildfire, or big game animals themselves, to name a few. Both the Wildlife/Big Game and Range sections in Chapter III and IV of the FEIS discuss past and ongoing improvement practices.

The amount of potential livestock use on any site is determined by the forage production of that site, and management area direction determines allowed use over a broader area. "Poor" condition sites produce less forage for use by all animals than do "fair" or "good" condition sites, so the amount of livestock use allowed on "poor" condition areas is less than on "good" condition areas. The management goals, including that for improving the lower-condition ranges, are displayed in the Forest-wide Standards and Guidelines and the Management Areas in Appendix D of the FEIS and Chapter 4 of the Forest Plan.

COMMENT NO. 18: What is the "clipping" method designed to accomplish? Is it to establish annual vegetative productivity? What would really be measured by a transect?

FOREST RESPONSE:

Yes, "clipping" measures annual forage production. With this method, all the suitable forage on a small, ungrazed area is clipped to one inch above ground level; it is allowed to dry, then is weighed. The weight is then extrapolated to determine the amount of forage produced per acre on a given area of land that year. Transects measure "trend," which is existing condition on an area in relation to the condition measured for that area at some point in the past. Transects can be permanent (measured about every 10 years in exactly the same location) or paced—taken in the same general area. They measure which vegetative species (and how many of each) are present at this reading in relation to past readings. Comparing the readings for an area determines if the condition is raising or lowering in relation to the site's potential. Brief definitions have been added to the monitoring plan in Chapter 5 of the Forest Plan.

COMMENT NO. 19: Research indicates that improving the range condition will ultimately increase the number of cattle on the Forest Will putting more cows on the Forest result in an overall increase in use of "poor" sites?

FOREST RESPONSE:

Improving the range condition means an increase in the amount of forage produced across the Forest. Not all of that increased forage production is available to or suitable for domestic livestock use, or big game use for that matter. The allocation of available and suitable forage is discussed in the Wildlife and Range sections of Chapters III and IV of the FEIS. Management Area prescriptions found in Appendix D of the FEIS and Chapter 4 of the Forest Plan detail how areas of the Forest will be managed, and give standards and guidelines that would involve allocation of increased forage.

COMMENT NO 20: The final Plan should include an inventory of range conditions for all grazing lands (not just big game winter range) and what steps the agency will take to restore damaged range. The Final Plan should also identify livestock grazing allotments, including the suitable and nonsuitable portions of each allotment. The location and condition of existing allotments is necessary in order to ascertain the localized impacts of grazing on soil, water quality, and fish habitat.

FOREST RESPONSE:

A table listing range condition acres by allotment has been added to Chapter III of the FEIS and Chapter 2 of the Forest Plan. Forest-wide Standards and Guidelines and Management Area prescriptions found in Appendix D of the FEIS and Chapter 4 of the Forest Plan detail guidelines for proper management of the rangeland vegetation. Suitable and nonsuitable portions of each allotment are shown on large-scale maps for each in the allotment management plan, but are not displayed in the FEIS or Forest Plan. Resource objectives established for each allotment deal directly or indirectly with maintaining or improving rangeland condition. Monitoring needs and mitigation measures are also part of the allotment management plans. A map showing locations of all Forest grazing allotments has been added to Chapter III of the FEIS and Appendix A of the Forest Plan.

COMMENT NO. 21: The option to select maintenance of a stable vegetative trend, as referred to in the range goal statement on page 4-46, is not acceptable for degraded conditions.

FOREST RESPONSE:

The Range goal statement in Appendix D of the FEIS and Chapter 4 of the Forest Plan has been clarified. The goal is, and has been, to manage for an upward trend for areas in less than "fair" condition and for an upward or stable trend for areas in "fair" or better condition. The Range section of Management Area D1 (found in the same two locations in the planning documents) has also been clarified.

ALLOTMENT MANAGEMENT PLANNING

COMMENT NO. 22: On page 4-46, specify a schedule for updating allotment management plans. Topics of utilization standards, livestock accountability, coordination with wildlife on water developments, predator control, season of use, analysis standards/methodology should be included. A site-specific analysis and a comprehensive reassessment of range conditions should be done on all allotments as part of the forest planning process.

FOREST RESPONSE:

Appendix A of the Forest Plan lists a schedule for updating the allotment management plans for all allotments. All the items you mention are discussed in allotment management plans as they apply to that particular area of land; analysis and assessment of range condition in each allotment is also done as a part of that updating process The level of analysis conducted can range from a verification of current data to a complete reanalysis of all allotment acres and is dependent upon the apparent accuracy of existing data. Allotment management plans are prioritized for updating in order to implement Forest Plan

direction on all areas during the planning period, shown in Forest Plan Appendix A (all will be updated within the next 10 years, but not prior to issuance of the FEIS and Forest Plan).

COMMENT NO. 23: A list of the number of AUM's per permittee is needed Is there any subleasing?

FOREST RESPONSE:

The size of grazing permits on the Forest runs from a low of 3 cattle to a high of 779, and sheep permit size varies from 700 to 3900. The number of AUM's can be estimated if you know the average grazing season is 3 to 3.5 months for sheep and 4 to 4.5 months for cattle. Upper limits for grazing permits are established for each national forest—no permittee can place more than a certain number of livestock under permit on National Forest System lands (nationwide) For the Umatilla NF, the upper limit is 600 cattle and 6,000 sheep; therefore, if an individual is issued a grazing permit on this Forest for 600 cattle, the individual is not eligible to be issued additional numbers of sheep on this Forest, or additional numbers of livestock on any other national forest. Special limits are occasionally approved (as in the one case above, of 779 cattle), but only if certain conditions created the need for the upper limit

Management area descriptions provide direction for proper management of general areas, and allotment management plans state the objectives and methods for achieving that direction. All permittees must abide by the terms and conditions stated in the planning documents and in the issued grazing permit, regardless of the size of that grazing permit. The same qualifications are required for all prospective permittees—they must own the livestock to be placed under permit and they must own base property necessary to carry out the livestock handling operations. A permittee is not eligible to utilize a national forest grazing permit if he does not own both the land and the livestock. "Subleasing" is not allowed on National Forest System lands.

COMMENT NO. 24: On page D-8, Guideline 11d states, "Vegetative use guidelines should aim for no more than 40 percent utilization by weight of the total forage of all species combined on a site.... "Such a guideline allows extirpation of favored forage species to be balanced by retention of unpalatable species. Allowing 60 percent utilization of bluegrass along anadromous streams is not a very specific standard. Does this imply 60 percent of annual production or 60 percent of a particular season?

Specific utilization standards for all riparian habitats should be adjusted for range type, condition, grazing season, season of use, and for specific forage type, e.g., grass, browse, etc Do not limit utilization standards to only Class I and II streams.

FOREST RESPONSE:

Revised Forest-wide Standards and Guidelines for forage utilization are found in the Range section of Appendix D of the FEIS and Chapter 4 of the Forest Plan, and include levels for riparian areas. The standards address allowable levels of utilization for the grazing season and apply to all Class I, II, and III streams. Individual allotment management plans address the utilization levels for individual forage species and on specific areas within the allotment, based on management objectives for the allotment. Standards set for allowable utilization of individual species are for the percent of weight of the plant that can be removed. Weight will vary from species to species, depending on its growth form and nutrient storage requirements; accordingly, the height of the plant remaining after the weight is removed will vary from species to species. For this reason, allotment management plans will generally list the allowable use for individual species as stubble height remaining after grazing. The allowable height varies by riparian area, upland area, or forested area, and so then do the utilization standards found in Appendix D. They are a sum for all the species in a specific area Allotment plans address all the comment items, and items may vary for specific areas within allotments.

COMMENT NO. 25: A minimum height and density of forage should be set for the areas outside of the fenced riparian zones. When this minimum is reached, all livestock should be removed from that section of range. This minimum should be set high enough to allow adequate feed for the local elk population even in a dry year but low enough to minimize fire danger.

FOREST RESPONSE:

Forest-wide Standards and Guidelines address allowable use levels for all areas, including riparian pastures The situation you describe of moving livestock, once allowable utilization levels have been reached, while meeting other resource objectives, is the core of proper rangeland management.

COMMENT NO. 26: Why would available forage be utilized at 90 percent? No other forest has advocated such a high utilization rate.

FOREST RESPONSE:

This standard applied only to use of transitory ranges created as a result of timber harvest. The high use level is designed to reduce forage competition with newly-planted trees and to allow use of the resource before tree canopy closure reduces most of the forage growth. The revised and clarified allowable use level is found in the Range section of Appendix D of the FEIS and Chapter 4 of the Forest Plan. The Standard states that 80 percent utilization is allowed for big game and livestock combined (and livestock use does not exceed 60 percent).

COMMENT NO. 27: If utilization surveys are done only on representative allotments, and utilization standards are exceeded on the few that are monitored, will this be sufficient data to require removal of all cattle ahead of the normal termination date from all allotments? If utilization is measured only once a year on these allotments, does the Forest believe that this measurement can be timed to coincide with the date of exceeding the standard so that cattle can be removed before damage is done?

FOREST RESPONSE.

Representative utilization surveys could be sufficient to remove all livestock from the Forest, but it's very doubtful that such a situation would ever arise. Even in an extended or widespread drought, both forage production and forage utilization usually vary widely from one area of the Forest to another. In most cases, the fluctuations are noticeable even within individual allotments.

Allotment inspections and utilization surveys are generally conducted on every allotment every year, and usually much more than once. The frequency is determined by allotment management plan objectives, size of allotment, and complexity of the grazing system in use, for example. Inspections are timed to observe livestock in their sequence of moves throughout the growing season; the observations and measurements assure that proper utilization is achieved, and permittees are beginning to gather livestock for moving to the next pasture before overuse occurs. Scheduled move dates are based on known forage capacities for each unit (and are continually refined by past observations and inspections), and generally only have to be "fine-tuned" to account for annual climatic variations. In the event inspections point to the need to remove livestock early in a few or several areas, other allotments will quickly be checked to see if the problem is widespread. A vast majority of permittees keep Forest Service personnel informed of local conditions, and are already taking protective measures in such instances. Grazing systems in use on individual allotments are generally so diverse, and versatile, that early removal of all livestock from a ranger district or the Forest would be a very rare case.

AVAILABLE/SUITABLE FORAGE

COMMENT NO. 28: On page 2-14 of the draft Plan, 189 million pounds is 89 percent of 225 million pounds, not 36 percent. If only 31 percent of the forage production area is suitable for domestic livestock, this equates to 69.75 million pounds. What is the maximum forage production level?

FOREST RESPONSE.

The 225 million pounds is a typographical error; total forage production is 525 million pounds. About 36 percent of the production (189 million) is available for use by all browsing and grazing animals Only 31 percent of this total (58 million) is suitable for use by domestic livestock; cattle and sheep are currently allocated only 44 of the 58 million pounds of suitable forage This same discussion is found in Chapter III of the FEIS.

COMMENT NO. 29: On page 2-14 of the draft Plan, you state, "The maximum potential forage production levels could support over 103,000 AUM's per year; an 87 percent increase over current permitted grazing levels." Is this maximum potential based on a benchmark analysis?

FOREST RESPONSE:

Yes, it is based on the maximum range benchmark (as discussed in the Analysis of the Management Situation, 1985).

COMMENT NO. 30: The last paragraph on page 2-14 of the draft Plan states, "The Forest has the potential to increase current livestock use by more than 60 percent based on available forage supply." Is this available or available suitable? If it is the latter, 60 percent is in error because present livestock use is 63 percent of the available suitable range.

FOREST RESPONSE:

It is the forage available for allocation to domestic livestock after all needs are met for state management objective levels for deer and elk.

COMMENT NO. 31: The short-term effects of livestock grazing on transitory range will include surface disturbance and loss of forage productivity due to soil compaction. Mitigating the damage and degradation created by livestock, even under intensive management, is not cost-effective, as stated in the last sentence of the first paragraph on page 3-14 of the draft Plan.

FOREST RESPONSE:

Discussions of effects of grazing on transitory range are found in several areas of Chapter IV of the FEIS, including Rangelands, Forests, Soils, and Riparian Areas Forage increases as a result of timber harvest are discussed in Chapter III of the FEIS and Chapter 2 of the Forest Plan. The reference cited about cost-effective improvements refers specifically to fences and water developments installed to utilize the tripling of forage that occurs as a result of timber harvest activity Amortizing a $500-$1000 improvement over a 10- to 30-year period, for at least a tripling of forage capacity, does result in a positive benefit/cost ratio.

COMMENT NO. 32: Transitory range forage appears to be based upon potential production rather than tree canopy cover. Forage production is usually affected more by tree canopy cover than by livestock since "maximum wood production requires high stand density, early closing of tree crowns, and minimum competition with herbaceous vegetation" (F.C. Hall, USFS, 1986). Will grazing affect timber production?

Total forage production on the Forest may decline if only even-aged timber harvest systems are used because managed even-aged stands eliminate forage production soon after the tree canopy closes and dense even-aged stands produce no forage. Forage is produced in uneven-aged stands on the Forest, but the simple models used by the Forest Service do not show that this occurs.

FOREST RESPONSE:

Refer to the Rangelands and Forests sections in Chapters III and IV of the FEIS and Chapter 2 of the Forest Plan for a detailed discussion of transitory range. Past research results from the Pacific Northwest Forest and Range Experiment Station in La Grande and the Range EVAL project in northeastern Oregon have indicated an approximate tripling of the forage production after timber harvest (and artificial reseeding tends to double or triple that production figure). The length of time that increased forage is available is largely a function of tree canopy closure. Grazing transitory range areas is designed to (1) utilize the forage for whatever period it is available on a specific site, and (2) minimize herbaceous competition with reforestation efforts. When the timing and length of livestock use is properly managed, grazing and timber production complement each other. The effects of grazing on forests are discussed in the Forests section of Chapter IV of the FEIS.

As for even-aged management, forage production tends to be high for about 10 years following harvest, then tapers off for the next 10-20 years; tree canopy closure has erased all forage production increases

by 30 years after harvest (La Grande PNW Experiment Station and Range EVAL project research results) The Forest-wide production figures are based on the assumption that new harvest areas are being opened up as old areas are closing in, resulting in a "constant" forage production level across the Forest with use of even-aged management. Much less forage and browse is produced in an uneven-aged stand due to the reduced light and changes in microclimate brought about by the remaining high canopy. Group selection patches will generally produce more forage and browse than single tree selection areas, but will still produce less than stands treated with even-aged management.

COMMENT NO. 32A: If new grazing potential for logged areas, will this result in simply higher numbers of livestock, or will depleted ranges be rested by transfer of cattle to new grazing? Domestic livestock grazing should not be increased because increases in forage following timber harvest are quite variable and slow, the Forest Service ability to adjust stocking levels in the short term is very limited, and once the permit is increased it is very difficult to reduce animal numbers.

FOREST RESPONSE.

Any proposed increase in grazing levels across the Forest is based on the capacity created as a result of recent and continued timber harvest Forage production on areas with timber management will tend to follow the growth scenarios described in the previous response. The decision to increase numbers of livestock is made on an allotment by allotment basis and is dependent upon the management objectives for that allotment In most cases, livestock use is shifted from old harvest areas where the canopy closure is eliminating the forage to newly-harvested areas with recent forage increases An increase of 6 percent in grazing capacity is projected across the Forest in the selected alternative as a result of expanding transitory range capacity from timber harvest. Increasing livestock numbers is one way to utilize the increased forage capacity; increasing seasonal use is another. In the latter case, an increase of 8-12 days in the season of use can bring about the increased level of use. A combination of the two methods is also a possibility. Refer to the Rangelands and Forests sections in Chapters III and IV of the FEIS for a discussion of transitory range

STRUCTURAL/NONSTRUCTURAL IMPROVEMENTS

COMMENT NO. 33: On DEIS page IV-55, paragraph 3, the Forest should indicate whether fences will be designed to allow for big game passage and should fully discuss impacts if they are not so designed.

FOREST RESPONSE:

The wording has been added to the Wildlife mitigation section of Chapter IV of the FEIS. Fences constructed for range administration purposes—allotment boundaries, pasture divisions, or livestock exclusion areas—are designed to allow for big game passage. Specifications for numerous kinds of fence construction are found in the Forest Service Handbook titled "Structural Range Improvement." The specifications address post spacing, wire spacing, methods of construction, and materials used, for example.

COMMENT NO. 34: The final Plan should include a sufficient level of range improvement investments to support the level of grazing use proposed in the draft Plan.

FOREST RESPONSE:

Allotment management plans detail the range improvements necessary to implement the detailed grazing system and improved vegetative management on each allotment. The improvement list may include fencing, water development, seeding, and/or prescribed burning, for example. Sale area improvement plans for individual timber sale areas also detail improvements necessary to mitigate any negative effects of harvest activity and can include efforts—such as seeding, fencing, or water developments—necessary to utilize the transitory range created as a result of timber harvest.

The Itemized Budget section of Appendix A of the Forest Plan details annual dollar needs (and target accomplishment) necessary to implement the Plan In summary, $62,000 in Congressionally-appropriated range funds is needed annually to construct 24 structures (a structure is 1 water

development or 1/2 mile of fence), enhance forage on 200 acres (seeding and/or burning), and control 37 acres of noxious weeds. Sale area improvement funds totaling $95,000 will implement an additional 13 structures, nearly 2,000 acres of forage enhancement, and 65 acres of noxious weed control annually. These figures reflect the current management plan needs. As the plans are revised, so are the funding needs for implementation.

COMMENT NO. 35: The term "structural improvements" is misused. Improvements means enhancements. The fences, water developments, etc. are mitigation expenditures to prevent damage. If there were no grazing there would be no damage in the first place. Improvements generally take place when a previously overgrazed area is fenced off from grazing

FOREST RESPONSE:

The term "range improvements" has been used for decades to describe physical management actions that improve/increase the rangeland vegetation resource or improve/increase the use of that resource by domestic livestock. Fences and water developments are examples of "structural improvements," while seeding and prescribed burning are types of "nonstructural improvements." There are cases where fences are constructed to exclude livestock from overused areas and allow the forage resource to improve. There are also times when improvements are installed/completed to prevent resource conflicts from arising to begin with; however, fences and water developments are usually installed to allow livestock use of certain areas at optimum times and to manage the distribution of grazing use to achieve the proper levels of forage utilization. The use of seeding and prescribed fire is usually designed to improve the quality (and quantity) of suitable forage for all grazers and browsers, including livestock. When proper grazing systems are implemented on range allotments (complete with necessary improvements to carry out the systems), proper utilization of the forage resource results.

GRAZING FEES

COMMENT NO. 36: Grazing fees should be increased. They should be used to fund reseeding projects and other improvements.

FOREST RESPONSE:

Grazing fees are currently used to fund range improvements. By law, 50 percent of the grazing fees paid into the U S. Treasury are returned to the general area where they were collected in order to fund range improvement projects. This is called the Range Betterment Fund First priority for use of the funds is to resolve any resource conflicts or deteriorated conditions that exist on the allotment, and to improve "poor" condition rangelands. The monies are also used for construction of fences and water developments, seeding and burning projects, and noxious weed control. See the following comment for a discussion of grazing fee levels.

COMMENT NO. 37: The statement on DEIS page III-28 that, "the demand for grazing land for cattle exceeds the current resource ..." must be stricken. As long as the market price for grazing is four to eight times higher than the $1.37 charged to the permittee, demand will always be greater than supply.

The subsidization of grazing negatively impacts private land owners who are in the business of renting grazing land The below standard fees charged are in direct competition with private land fees. Fees must be brought up to more realistic levels to allow for competitiveness A reduction in available lands for grazing, increased user fees, and an educational program designed to inform grazers of more cost efficient and profitable ways of herd management are all necessary to reduce the negative impacts of this activity.

FOREST RESPONSE:

The statement is true as written. Your second sentence seems to acknowledge that fact, but allows that the grazing fee level is the reason why Congress established a formula for calculating the grazing fee with passage of the Public Rangelands Improvement Act (PRIA) of 1978. The PRIA formula is still in effect, although legislative authority lapsed after 1985, and it has been extended by Executive Order since that time; Congressional action is still pending Thus, the issue of grazing fees is decided at the

national level, and a discussion of supply/demand relationships based upon any assumed fee change is outside the scope of these planning documents. All or nearly all of the grazing permittees are dependent upon National Forest System lands to "round out" their yearlong livestock operations. Raising the grazing fee to some certain level, theoretically, would make it more economical for permittees to seek summer range elsewhere. What that theoretical level might be is not known, and would vary by individual.

The decision to use (or not use) cost efficient and profitable herd management techniques is the responsibility (and personal business) of each grazing permittee. Proper management of all resources, including rangeland vegetation, is the responsibility and the goal of the Forest Service, and is stated in the Range section of Chapter 4 of the Forest Plan. Range administration efforts focus on informing the user publics (including grazing permittees) of proper resource management techniques; considerable coordination is required with permittees and other interested parties to draw up the allotment management plans that detail resource objectives, improved management systems, and available grazing lands for each allotment.

MONITORING NEEDS

COMMENT NO. 38: Requiring only a 10 percent sample annually means that each allotment would be observed every 10 years. This frequency of sampling is inadequate for really keeping any control on range condition.

FOREST RESPONSE:

It means that paced transects and ocular observations would be made on a minimum of 10 percent of the allotments each year. The words "at least" have been added immediately prior to "10 percent" in the Range Monitoring section in Chapter 5 of the Forest Plan. The same is true for reading at least 20 percent of the riparian area photopoints each year. In regard to the Cluster and Transect readings (the permanent transects), that item has been left at 10 percent annually; these transects, commonly known as Parker 3-Steps, have long been read at 10-year intervals to determine long-term change in rangeland condition, and they will continue to be read in that manner. The requirement is that every allotment will be monitored at least once every 10 years, but nothing in the wording prevents certain allotments from being monitored one or more times each year. Emphasis is placed on monitoring allotments with resource concerns in an effort to resolve the concerns; the level of monitoring is commensurate with the allotment objectives, and is stated in the individual allotment management plan.

COMMENT NO. 39: Will all allotments be examined for forage utilization annually? If not, what fraction of them will?

FOREST RESPONSE:

They will, but the method may vary by allotment and by year; methods are stated in Chapter 5 of the Forest Plan. Field exams (allotment inspections) will be made each year on each allotment; based upon visual observations of utilization levels during the inspection(s), additional information may be needed. Paced transects or vegetation clipping can be completed on one or more areas of individual allotments in order to determine annual forage production and utilization levels. The monitoring plan states this will be conducted as needed; such things as existing resource conflicts, grazing system employed, seasons of use for key areas of that allotment, or existing climatic conditions will determine the "as needed" for meeting allotment objectives in any given year. The timing for inspections to observe levels of forage utilization depends upon the sequence of livestock moves within each allotment; areas to be observed on the most frequent basis are called "key areas" and are listed in the individual allotment management plans.

COMMENT NO. 40: What range monitoring will be required to protect range and riparian zones in all allotments from overgrazing during periodic droughts?

FOREST RESPONSE:

Forest-wide Standards and Guidelines in the Range section of Chapter 4 of the Forest Plan list allowable utilization levels for riparian areas, upland areas, and transitory ranges. Chapter 5 of the Forest Plan lists the methods—field exams (allotment inspections), reading transects, and clipping—used to determine levels of forage utilization, with inspections being the most common. Livestock are to be moved to the next scheduled area (or off the Forest once all scheduled areas have been grazed) when allowable use levels have been reached, regardless of the climatic conditions in any given year.

COMMENT NO. 41: Are three-way exclosures in effect to monitor range response to livestock/big game?

FOREST RESPONSE:

Four existing exclosures are located on the Forest and are used to monitor vegetation response to livestock/big game utilization. One part of the test area is fenced to exclude use by domestic livestock, while a second part is fenced to exclude use by both livestock and big game. Response of the vegetation inside the exclosures is measured against vegetative response outside the fenced areas, where grazing use by both big game and livestock is allowed to take place. The objective is to monitor long-term trend, so measurements along permanently-established transects are generally read once every 10 years.

COMMENT NO. 42: There is a need for more data gathering and study on grazing practices.

FOREST RESPONSE:

Research concerning grazing systems and management practices is continual and ongoing in many parts of the country, largely from universities and Forest and Range Experiment Stations. As with many resources, range management is a constantly-evolving science. "State-of-the-art" knowledge has been, and continues to be, incorporated as it becomes available. Improved grazing systems and management practices give land managers better tools to properly administer the rangeland vegetative resource.

COMMENT NO. 43: How would the Barometer Watershed act as a control for studies of grazing effects?

FOREST RESPONSE:

The Barometer Watershed was started in 1966 as part of a national effort to monitor the effects of timber harvest on water runoff. The study was never intended or designed to monitor any type of grazing information; therefore, no transects or photopoints were ever installed that could be used to monitor "before" conditions. Since many other variables are at work in the study area, such as big game use and various timber prescriptions, the watershed is not an ideal "controlled" environment in which to study grazing vs. nongrazing effects. However, since domestic livestock has not been permitted there since the mid-1940s, the area can show a long-term visual trend of vegetative conditions without livestock utilization.

DEFINITION OF TERMS

COMMENT NO. 44: The terms "quality intensive," "quality extensive," and "allotment management plan" found on draft Plan page 2-15 should be explained. Range ratings and comparable terms should be defined.

FOREST RESPONSE:

The following range terms are located in the Glossary found in both the FEIS and the Forest Plan:

Allotment
Animal Unit Month (AUM)
Available Forage
Carrying Capacity
Forage
Forage Areas
Herbage
Intensity of Grazing
Moderate Grazing Use
Palatability
Plant Community
Plant Community Type
Proper Use
Range Analysis
Rangelands
Range (Strategy) Management Level
- *Strategy A*
- *Strategy B*
- *Strategy C*
- *Strategy D*
- *Strategy E*

Safe Use
Suitable Range
Vegetative Trend

In addition, definitions of the following have been added:

Allotment Management Plan
Allotment Classification
- *PA*
- *PB*
- *PC*
- *PD*
- *QE (Quality Extensive)*
- *QI (Quality Intensive)*

Range Condition
- *"Good"*
- *"Fair"*
- *"Poor"*
- *"Very Poor"*

Range Improvement

WILDLIFE (GENERAL)

OLD GROWTH HABITAT

DEFINITION AND CHARACTERISTICS

COMMENT NO. 1: The description of old growth on DEIS page II-103 lacks clarity. The first paragraph states that old growth will decline under all alternatives, but when the maps showing dedicated old growth for each alternative are compared with "old growth areas," the dedicated areas under some alternatives are greater than those in the 1986 map. Clearer definitions, comparable maps, and a column in Figure II-C showing existing old growth for comparison, would be helpful.

FOREST RESPONSE:

The "Old Growth Area" resource map (1986) shows a schematic display of all existing old growth habitat on the Forest and the areas that were "dedicated" as a part of management strategy C1. Acreages are now displayed in Figures II-D and II-E and Table II-8 for each alternative. It may not have been clear that, included in these charts and in the narrative, some of the dedicated areas are not presently "suitable" old growth habitat, but merely "capable" of becoming old growth at some time in the future. "Capable" units have been selected and dedicated in order to meet management requirements for distribution of the habitat throughout the Forest. In some of the alternatives with greater emphasis on wildlife and their habitats, additional "capable" old growth units were identified and shown on the maps. The narratives in Chapters II and IV, and in other places throughout the FEIS, have been revised to more clearly display suitable and capable old growth tree habitat conditions on the Forest for each alternative.

COMMENT NO. 2. The definition of old growth on DEIS page III-13 doesn't indicate age, nor are acres given. The acreage figures provided include mature trees. However, Figure II-C on page II-103, and the map "Old Growth Areas 1986," give no indication that mature habitat is included.

FOREST RESPONSE:

The description of old growth forests is taken from the regional definition and is as much a function of tree size and number, stand structure, and levels of decadence, as of age (see the Glossary in the FEIS for a definition). The identification and mapping of all existing old growth tree habitat on the Forest relied on this definition and, while there may have been obvious inclusions of mature or other successional stages in the mapping, it was essentially an identification of old growth tree habitat The appropriate pages of the FEIS and Forest Plan have been revised to better describe existing habitat conditions.

COMMENT NO. 3: The DEIS and Forest Plan lack a detailed discussion of old growth groves that will be maintained under each alternative, and tables showing the amount of existing and future old growth. In addition, your concept of "managed" old growth, and the decision process between "managed" and "dedicated" old growth in each alternative cannot be understood.

FOREST RESPONSE:

The Forest made the assumption that each dedicated, suitable old growth habitat unit meets the definition criteria described in the Glossary, and that a specific inventory of each unit, as shown in Appendix A of the Forest Plan, will be done. The monitoring process will also be used to help quantify the various habitat parameters However, as described above some of the dedicated units do not presently meet all old growth characteristics, but are "capable" of meeting requirements at some time in the future The "capable" dedicated units have been added to meet old growth distributional requirements.

In the Forest Plan, "managed" old growth habitat applied only to lodgepole pine as described in Management Area C2 in Chapter 4. The need for management activities (thinning) results from the tendency of lodgepole pine stands to stagnate into dense "dog-hair thickets " In this situation, the trees will not achieve the large diameter classes necessary to provide large tree habitat in a timely manner For this reason, thinning early in the stand development will open the canopy and allow for rapid growth

of larger diameter trees. The managed lodgepole stands will then be allowed to develop naturally into an "old growth" habitat condition. Several changes in Appendix D, Chapter IV, and other appropriate places have been made to better explain this concept and reduce the level of confusion.

COMMENT NO. 4: It is important when determining old growth stands that a better onsite method be developed which truly recognizes and categorizes the stands which are old growth. No clear, unambiguous, definition of old growth has emerged from this planning process. Perhaps the definition used by the Pacific Northwest old growth task force would be a good one.

FOREST RESPONSE:

As directed, the Forest has utilized the definition of old growth tree habitat used in the Regional Plan. While a more lengthy and detailed definition may be possible, the Forest feels the one used is adequate and does provide the wide range of expectations held for old growth forest habitat in the Blue Mountains. The Pacific Northwest old growth definition deals primarily with Douglas-fir forest criteria in western Oregon.

COMMENT NO. 5: There is a continual confusion between mature trees and old growth. Managed, second-growth stands can provide many of the habitat components needed to maintain viable populations of old growth dependent species. The FEIS should include an in-depth review of the recent research literature on this subject.

FOREST RESPONSE:

The Forest does not have any wildlife species that are truly "dependent" on old growth habitat. Several species, however, such as the pileated woodpecker and pine marten, show a definite preference for old growth and mature tree habitats. It is this situation that may have led to confusion in use of the terms "mature" and "old growth" habitats. The FEIS and Forest Plan have been revised in the appropriate areas in order to more clearly distinguish between mature and old growth habitats and to reduce confusion that may have resulted. Both habitat types are needed in order to respond to the wildlife species that require large, old, and/or decadent tree habitat. The Forest has a legislated obligation to maintain viable populations of all native wildlife species and to protect their habitats, including old growth, in order to insure healthy populations of all wildlife species and to maintain vegetative diversity. The Wildlife section of Chapter IV of the FEIS discusses the consequences of the loss of old growth tree habitat on the Forest. The "cost" of reserving portions of this essential habitat is also analyzed. The References section of the FEIS includes a list of publications used in the analyses.

COMMENT NO. 6: Is the designated old growth based upon surveys of old growth stands or does it represent policy-driven standards that are then used to find stands that meet the minimum criteria? What criteria are used to designate old growth tracts? Do you have anyone on-the-ground to evaluate conditions and to locate goshawk nests? Will your stands be too small or piecemeal to be of much use to certain species?

FOREST RESPONSE:

The criteria used in the selection of old growth tree habitats are contained in the regionally-developed management requirement package and included in the FEIS, in Chapter IV and Appendices D and M. The criteria were used in conducting an extensive inventory of existing Forest habitat using maps, aerial photos, and the collective knowledge of district personnel. The stands carefully followed management requirement directions regarding size and spacing criteria and should be adequate for the species involved. As the Plan is implemented, the stands, and population trends of wildlife species using them, will be monitored on-the-ground.

COMMENT NO. 7: On DEIS page IV-29, is the desired decadency of old growth stands; down timber, snags, multi-layering, openings, etc., found in 240-year-old forests?

FOREST RESPONSE:

Forests in the Blue Mountains are relatively short-lived compared to the Douglas-fir forests in western Oregon. As described in "Wildlife Habitats in Managed Forests-the Blue Mountains of Oregon and Washington," the desired old growth habitat characteristics of decadence, dead and down material, and other desired characteristics are assumed to be well-developed by the time forest stands in the Blue Mountains are 250 years old

COMMENT NO. 8: Thomas (1979, p. 81) reports as many as 121 down logs per acre in old growth Douglas-fir forests in western Oregon. Estimating capability to provide habitat for numerous wildlife species based on two logs per acre is estimating based on no data.

FOREST RESPONSE:

Habitat conditions in Douglas-fir old growth habitat in western Oregon in no way compares to conditions in the arid Blue Mountains of eastern Oregon and Washington. As indicated, the Forest-wide Standards and Guidelines in Appendix D specify the retention of no less than two down logs per acre (16 feet in length and 10 inches DBH at the small end). While this minimum management criteria may be based on little empirical research data, it is in agreement with the management guidelines suggested in "Wildlife Habitats in Managed Forests-the Blue Mountains of Oregon and Washington" (Thomas and others 1979)

COMMENT NO. NO. 9: The statement in the third paragraph on DEIS page IV-54, that "habitat conditions...will be enhanced in all alternatives," is confusing Depending on the alternative, riparian areas may deteriorate, old growth acreage may decline, etc If the sentence applies to the fact that habitat improvement projects are planned for all alternatives, this should be clearly indicated to avoid confusion and the appearance of contradiction. Since impacts occur to wildlife from other management activities, it is assumed that these impacts are over and above any enhancement provided by programmed projects. This should also be clarified.

FOREST RESPONSE:

As indicated, this statement refers specifically to habitat improvement projects proposed for each alternative and is not related to either enhancement or degradation of habitat conditions that may occur as a result of other management activities. The Wildlife Habitat Improvement section in Chapter IV of the FEIS has been revised to more clearly state the purpose and relieve any confusion that may have resulted.

SIZE, SPACING, AND LOCATION

COMMENT NO. 10: Figure II-C on DEIS page II-103 is misleading since it purports to depict old growth habitat acres without including such areas already set aside.

FOREST RESPONSE:

DEIS Figure II-C on page II-103 depicts, by alternative, all dedicated old growth habitat on the Forest outside of wilderness. The old growth available in established wilderness does not, and will not, change as a result of any alternative and is not, therefore, included in the figures As stated in this section, there are about 53,000 acres of old growth habitat in wilderness in each of the alternatives

COMMENT NO. 11: The more than 236,000 acres of designated wilderness on the Forest (Table III-15 on DEIS p. III-22) that will never be logged, barring natural disasters, will provide a vast reservoir of old growth timber to meet wildlife objectives.

FOREST RESPONSE:

In time, much of the forested areas within established wilderness may become old growth habitat At the present time, about 53,000 acres of this habitat was inventoried in established wildernesses for the

DEIS (see Chapter II, Old Growth Habitat). Wilderness old growth habitat was updated for the FEIS and is now nearly 69,000 acres. Unfortunately, however, old growth acres in wilderness are not sufficient for either the amount or the distributional requirements of this habitat type for the entire Forest The management requirement direction (see Appendix M of the FEIS) specifies the allocation of additional acres of this type outside of areas allocated to wilderness management as shown in each of the management alternatives.

COMMENT NO. 12: It is not clear whether acres assigned to mature and old growth dependent species are all suitable or what proportion of acres and habitats might be capable at present Have any acres been assigned out of this category?

FOREST RESPONSE:

In order to meet the distributional requirements outlined in the regional management requirement direction, latitude was given to select areas "capable" of becoming old growth at some time in the future. The capable units selected should be those available with conditions as close to old growth habitat as possible. There are many areas on the Forest where existing old growth habitat is not presently available. Therefore, a number of "capable" units have been selected, mapped, and dedicated About 26 percent of the total dedicated areas on the Forest are estimated to fall into this category The narratives in Chapter II and IV of the FEIS and Chapter 4 of the Forest Plan have been revised to clearly display this information.

COMMENT NO. 13: The final Plan must provide a clear discussion of how old growth acres are modeled and allocated in the FORPLAN model.

FOREST RESPONSE:

Appendix B of the FEIS provides a discussion of how old growth acres are modeled in FORPLAN The FEIS has also been revised to reflect changes between the draft and final and includes a more complete discussion of how the old growth habitat is allocated and modeled.

COMMENT NO. 14: The Forest seems to emphasize "well distributed" habitat units with little regard for the capabilities of the wildlife species. Are mature and old growth stands situated or planned at correct spacing for wildlife requirements of movement, protection, and distribution?

FOREST RESPONSE:

Based on existing research and other publications included in Appendix M of the FEIS, the physical and biological capabilities of the respective indicator species was taken into consideration in establishing size and spacing criteria for old growth tree habitat. Further, based on assumptions made with respect to management indicator species, the needs of many other wildlife species that preferentially use this habitat type should be met For the amount of old growth tree habitat set aside in each alternative, and the size and spacing of the units, the Forest considered the movement, protection, and distribution of the management indicator species As a result, viable population levels of all management indicator species should be maintained.

COMMENT NO. 15: The map for Alternative F shows distances well in excess of 2 miles between most protected old growth areas. What is the spacing and density of old growth stands?

FOREST RESPONSE:

The spacing and distribution requirements are summarized in Appendix D of the FEIS and Chapter 4 of the Forest Plan. Designated old growth forest habitat units for each of the management indicator species have a different unit size and spacing criteria. The management requirement for distribution of pileated woodpecker units is roughly 5-mile intervals (each 12,000-acre unit of land) and for the pine marten it is roughly 3-mile intervals. In the FEIS, the Forest has designated habitat well above the management requirement level, with distributions ranging from 5-mile to about 2-mile intervals, depending on the management alternative.

COMMENT NO. 16: Designated old growth stands should be located in visual corridors, riparian areas, and less-economically viable unroaded areas whenever possible.

FOREST RESPONSE:

Within the constraints of size and distribution, designated old growth habitat units have been located in visual corridors, stringers, riparian areas, and roadless areas As shown in the alternative maps depicting dedicated old growth habitat, many of the designated units were also placed outside these areas in order to meet distributional requirements.

COMMENT NO. 17: It is not necessary to exceed the 180-year rotation length of the viewshed II areas to simulate old growth habitat. A 125-180 year range will provide the desired habitat components and viewing areas while minimizing the impact to Forest timber productivity.

FOREST RESPONSE:

As described in management strategy A4 (Viewshed) in Appendix D of the FEIS, the foreground retention objective is 146-181 years. The management objective is to develop the overall characteristic of large trees with the target diameter tree size of 24 inches DBH. The proposed rotation should provide the required number of large diameter trees. The viewshed strategy is not, however, intended to develop old growth tree habitat with the required dead and down tree material, a level of decadence in the stand, and other required old growth habitat characteristics As described by Thomas and others (1979), a managed rotation of about 240 years would be the most desirable management regime for old growth habitat.

DEDICATED AND MANAGED STANDS

COMMENT NO. 18: For what period of time are old growth stands dedicated? Will they be dedicated only temporarily until they can be replaced by younger stands?

FOREST RESPONSE:

The assumption is that dedicated old growth tree habitats identified in the preferred alternative will be protected through the 50-year period displayed in the FEIS (Table II-6). Because less total old growth habitat will be available than at present due to timber harvest activities, the concern for this important habitat component will continue to be a significant public issue in subsequent planning efforts. The likely outcome will be the continued retention of existing dedicated old growth units beyond the 50-year period.

COMMENT NO. 19: Dedicated old growth units will include various levels of tree diameters and hard snags. How were these old growth characteristics derived?

FOREST RESPONSE:

Numerous wildlife and old growth forest research studies over the past 10-15 years (and other literature such as Thomas and others 1979) have resulted in the development of these criteria. The studies have indicated that the major wildlife habitat characteristics of old growth forest habitat are large, defective trees with high levels of both standing and downed tree materials.

COMMENT NO. 20: Limiting all dedicated old growth sites to characteristics found on one limb of the curve at a single-site type further compounds the diminishment of vegetative and associated fish and wildlife health.

FOREST RESPONSE

As described in management area direction (Appendix D) and in Appendix M of the FEIS, old growth habitat consists of more than a stand of trees greater than 20 inches DBH. The stands must also have a deep, multi-layered canopy, the presence of many dead and down trees, and evidence of decadence and little human disturbance. The stands have also been designated at intervals throughout the Forest

to include many plant community types, elevations, and slopes to maintain a level of vegetative diversity The dedicated old growth units have not been limited to one characteristic or "limb of the curve at a single site."

COMMENT NO. 21: Maintaining ponderosa pine should provide habitat for many wildlife species

FOREST RESPONSE:

Ponderosa pine on the Forest is limited in amount and distribution and it occurs primarily at the lower elevations used as winter range by big game animals Still, the species is an important component of the forest community, providing both diversity and important wildlife habitat. As described in "Wildlife Habitats in Managed Forests" (Thomas and others 1979), there are 44 species of mammals, 95 species of birds, and 14 species of reptiles and amphibians that inhabit ponderosa pine habitats during all or part of their lifetimes. In order to maintain a representative portion of this important habitat on the Forest, and to preserve the species that make heavy use of this type, the Forest has dedicated representative portions as old growth tree habitat and has developed several management strategies that will "permit no scheduled" timber harvest or that maintain satisfactory cover for wildlife species.

COMMENT NO. 22: All old growth areas should be managed to allow for control of diseases that might spread to other areas of the forest. Managed old growth is more consistent with the requirements of the Organic Act, MUSYA, NFMA, and the 1984 Wilderness Act.

FOREST RESPONSE:

As described in FEIS Appendix B and in Table B-VI-1, the Forest has carefully analyzed the differences in resource outputs as a result of providing both "dedicated" and "managed" old growth tree habitat. The analysis indicated the "managed" approach is slightly more cost efficient than the "dedicated" approach; however, given the range of error in modeling, the approaches are basically equivalent in terms of cost efficiency. The Forest chose, therefore, to use the dedicated old growth management approach because (1) it provides a more dependable approach to meeting the management objectives, (2) various publics (including state wildlife agencies) have indicated a preference for this approach, and (3) adjacent Forests with similar timber inventory structures have shown the dedicated approach to be more cost-effective. The only exception is the case of lodgepole pine where the "managed" concept was used in order to develop the larger diameter (10- and 12-inch DBH) tree component necessary to meet the Management Requirement direction Either strategy is consistent with all appropriate regulations and legislation

Tree diseases and insects help to create or provide many of the very characteristics needed to make old growth trees effective as wildlife habitat, such as defective trees, and dead and down materials. The Forest also feels the management of old growth tree habitat through salvage, thinning, or other timber harvest or silvicultural treatments is generally inappropriate to meet the management objectives of the dedicated stands With the possible exception of dwarf mistletoe, disease spreading to adjacent Forest lands is generally not a problem. The Forest will utilize mitigation techniques to further limit the spread of diseases or insects to adjacent lands, by planting disease-resistant species adjacent to old growth units.

COMMENT NO. 23: We do not understand the inclusion of lodgepole pine under "mature and old growth" to be reserved for wildlife. Do lodgepole stands include the multi-layered understories, suitable DBH for pileated woodpecker use, size of down timber, understory forage, and other requirements to be classed as old growth for wildlife use?

FOREST RESPONSE:

The regional management requirement directions described in Appendices D and M, and again in Chapter IV, of the FEIS require a component of 10- and 12-inch DBH trees in designated old growth lodgepole pine stands. Normally lodgepole pine stands are relatively short-lived and develop neither the multi-layering, dead and down materials, or diameter classes to meet these requirements. For this reason, the Forest elected to designate the minimum level of 3,150 acres of this habitat type and manage the stands in order to achieve the desired stand characteristics. As described in Management Area C2

In Appendix D of the FEIS, these stands would be managed (periodically thinned) during the first 40-year period and left as old growth habitat for another 40- to 50-year period for those wildlife species making use of old growth lodgepole pine The northern three-toed woodpecker is the management indicator species for this type.

COMMENT NO. 24: With only 42 units of managed old growth (C2), how will it be possible to have them "distributed 2 miles apart, measure center to center" and still provide the necessary support for dependent species across the Forest?

FOREST RESPONSE:

The management requirements for the lodgepole pine plant communities require a component of 10- and 12-inch DBH trees. Inasmuch as lodgepole pine stands normally do not have this "large" tree component, the Forest elected to manage these stands as outlined in the C2 area and to permit thinning and other silviculture entries necessary to obtain the larger diameter trees Furthermore, the lodgepole pine plant communities are not uniformly distributed on the Forest Although a minimum number of lodgepole pine units was selected, the units are not distributed evenly across the Forest. The 2-mile distribution criterion was utilized whenever possible. Some additional acres of managed lodgepole pine have been included in the Forest Plan.

COMMENT NO. 25: What is the range of sizes typical of old growth lodgepole on unmanaged stands on a variety of site types?

FOREST RESPONSE:

The lodgepole pine plant community comprises about 8 percent of the forested land base on the Forest outside of wilderness; however, because of a recent history of bark beetles, disease, and fire, very little lodgepole pine exists that can be classified as "old growth" tree habitat as described in the Glossary or in Appendix D of the FEIS. What is available and presently "suitable" old growth tree habitat has been identified and designated as Managed Old Growth (C2), as described in Appendix D. The units provide essential habitat conditions for a number of wildlife species, including the northern three-toed woodpecker which serves as the management indicator for this plant community. Where available habitat exists, 42 units of 75 acres have been designated for old growth habitat management. In this management regime, two 75-acre units would be selected, with one serving as the "old growth" unit and the other receiving thinning and other required silvicultural entries in order to provide the 10- and 12-inch DBH trees needed to qualify (as described in the Forest-wide Standards and Guidelines in Appendix D).

AMOUNT OF OLD GROWTH

COMMENT NO 26: On DEIS page IV-172, the first sentence of paragraph 5 would give a more realistic disclosure of adverse impacts if "...the removal of some existing mature and old growth trees..." was replaced with "...removal (or harvest) of 66,000 acres of mature and old growth trees...."

FOREST RESPONSE:

The information presented on page IV-172 is necessarily brief and intended to be a summary of consequences. The acres affected and old growth habitat dedicated in each alternative are summarized in Table II-6A and several others The text has been changed to clarify the results The 66,000 acres of mature and old growth referred to is actually the number of acres retained for wildlife habitat and other values in the DEIS preferred alternative

COMMENT NO. 27: Under the National Forest Management Act, the Forest has an obligation to protect minimum viable populations of all native species Habitats must be maintained without any regard to any judgment as to the negative or positive role played with commodity production in the national forest Spreading the low acreage of 67,000 acres over the entire forest in the patchy network of protected old growth as shown on the Alternative F map is not going to protect the old growth ecosystem.

FOREST RESPONSE:

In response to the National Forest Management Act and other legislation, the region developed a set of management requirement (MR) standards designed to maintain the long-term viability of all Forest wildlife species (see the analysis in Appendix M of the FEIS). The designation of old growth tree habitat of appropriate size and distribution is an integral part of the management requirements (refer to Forest-wide Standards and Guidelines and Management Strategy direction in Appendix D). Further, the monitoring plan developed in Chapter 5 of the Forest Plan will follow habitat conditions and population trends with provisions to change management directions to insure the viability of wildlife species

The Forest has estimated that about 35,370 acres of old growth habitat outside of wilderness, distributed at specified intervals throughout the Forest, would meet the requirement In the DEIS and draft Forest Plan, Alternative F dedicated about 35,635 acres with an additional 31,100 acres estimated in roadless and riparian areas as shown in Table II-8. In response to public input, the FEIS preferred alternative, F/M, has identified and dedicated an additional 25 units of mixed conifer habitat for a total of 48,576 acres, and another 4,034 acres of managed lodgepole pine.

COMMENT NO. 28: Scheduling the reduction of old growth stands is scheduling the reduction and elimination of many species, including some which are threatened and endangered.

FOREST RESPONSE:

The only two federally-classified threatened or endangered wildlife species known to occur on the Forest are the bald eagle and the peregrine falcon (see T/E/S Species in Chapter III of the FEIS) Neither species is dependent on old growth tree stands, nor (as discussed in a biological assessment prepared as part of the Forest's consultation with the U.S. Fish and Wildlife Service) will they be impacted by the management proposals outlined in the FEIS

Sufficient old growth and dead and down tree habitat is retained in all alternatives to maintain viable populations of indigenous wildlife species While reductions will occur in available old growth tree habitat and "potential" populations of wildlife species associated with these habitats, the implementation of the Forest Plan will not result in the extirpation of any indigenous species.

COMMENT NO. 29: The DEIS indicates that the decrease from 112,000 acres of old growth outside of wilderness (a decrease of 40 percent in old growth habitat) will result in the directly-proportional decline in potential populations of old growth dependent species to minimum viable levels. However, it is quite possible that the effects will be magnified—once a population decreases to a certain level, further declines will be exponential rather than directly proportional.

FOREST RESPONSE:

If the Forest were to elect to maintain many of the management indicator species at the minimum viable population level, declines in potential populations may very well be exponential rather than directly proportional. The Forest has also projected an estimated 40 percent decrease in present levels of old growth habitat as described in Table II-8; however, as described and analyzed in Chapter IV and Appendix M of the FEIS, the Forest has proposed maintaining available old growth habitat well above the minimum requirement level. A directly-proportional decline in potential populations is the best estimate available.

COMMENT NO. 30: The effects of the major loss of old growth habitats has been seriously understated and incompletely evaluated in the DEIS. This is especially true considering the highly uneven distribution of old growth. The Forest should provide a much more thorough analysis of the complex environmental effects of turning major portions of the naturally-evolved forest communities into managed tree farms.

FOREST RESPONSE:

The consequences of eventually harvesting a large percentage of existing old growth tree habitat on the Forest have been described in Chapter IV of the FEIS. The FEIS has been revised to include both capable and suitable old growth habitat units not previously shown on alternative maps, to reflect

changes as a result of public input, and to more clearly describe in Chapter IV the effects on both wildlife species and their habitat over time. Existing old growth tree habitat is not uniformly distributed on the Forest at the present time. For this reason, the management requirements specify the designation of habitat units distributed at required intervals throughout the Forest in order to protect representative samples of plant communities, to maintain vegetative diversity, and to provide for the widespread distribution of the wildlife species that rely on this habitat type.

COMMENT NO. 31: Misrepresentation of the exact nature and extent to which old growth habitat is provided for, through dedication and retention under other strategies, leads the public to assume that the old growth resource is to be rapidly liquidated. This needs to be corrected in the final Plan.

FOREST RESPONSE:

The anticipated reduction in the present level of old growth tree habitat on the Forest is discussed in the FEIS in Chapters II and IV and displayed in Figures II-D, II-3, and IV-M. The latter figure was intended to display the desired "end result" for old growth habitat on the Forest estimated to occur by the end of the fifth decade. The figures may have caused some confusion and has, therefore, been revised to better display the loss of old growth habitat on the Forest during each decade and the consequences of the changes discussed in the narrative.

COMMENT NO. 32: Concerning adverse environmental effects on DEIS page IV-172: All alternatives except E will greatly reduce the amount of mature and old growth stands on the Forest. Short-term benefits of timber removal (which will provide forage) must be considered against long-term adverse impacts caused by removal of hiding and thermal cover.

FOREST SERVICE:

The cumulative and long-term effects of the loss of a large percentage of existing mature and old growth tree habitat on the Forest through the first 5 decades has been discussed in some detail in Chapter IV of the FEIS. The section has been revised somewhat to elaborate on the effects of the loss and/or fragmentation of existing old growth tree habitat.

COMMENT NO. 33: Some additional values supporting the preservation of all remaining naturally-evolved old growth forests need to be mentioned Have these values and the cumulative effects on them from implementation of the preferred alternative been considered in the DEIS?

1. Old growth provides the most critical factors (winter shelter and forage) for the maintenance of deer and elk herds.
2. Old growth is essential habitat to a wide variety of organisms, not just the well-known indicator species.
3. Preservation of old growth ecosystems depends as much on the adequacy of their distribution and elevation range as it does on their structural composition.
4. Timber harvesting within old growth forests may well bring about the complete loss of many components of the community, potentially affecting resources beyond the old growth stand itself.
5. It is poor land stewardship to destroy a resource that is incompletely understood and may well be irreplaceable.

FOREST RESPONSE:

A list of some of the inherent values of old growth tree habitat is shown in the Wildlife section of Chapter III and the consequences of reductions in this habitat are described in Chapter IV The two sections have been revised in the FEIS to include some of the additional values as suggested

COMMENT NO. 34: Old growth areas are the traditional hunting areas favored by tribal members and provide habitat for nongame bird species which have very sacred religious value and, therefore, are subject to treaty right protection.

FOREST RESPONSE:

The Forest has taken efforts to maintain populations of all resident wildlife species at levels significantly above the management requirement levels, and adequate old growth habitat has been set aside or dedicated for the use and enjoyment of all segments of the public, as shown in Tables II-6, II-7, and II-8 and Figure IV-K of the FEIS.

COMMENT NO. 35: The Forest may be setting aside more old growth than is actually needed to maintain healthy wildlife populations and imposing needless economic and social costs on Oregon's timber-dependent communities as a result. There is no evidence presented that makes any attempt to demonstrate the need for the 66,700 acres of various and sundry withdrawals of old growth retention in excess of 100 percent above the MMR level—a level which specifically has not been justified.

FOREST RESPONSE:

Based on regionally-established management requirement direction and criteria, the Forest estimated that the level of old growth tree habitat needed to meet direction, maintain viable populations, and maintain long-term genetic viability of the management indicator and other wildlife species using this habitat type is about 35,370 acres outside of wilderness (32,220 acres of mixed conifer and 3,150 acres of lodgepole pine). As displayed in Table II-8 and Figure IV-L of the DEIS, the preferred alternative (Alternative F) maintains old growth tree habitat only slightly above this figure at 35,635 acres As described in the Old Growth MR section of Appendix B (Table B-VI-1), the economic costs are not great and should have very little effect on the economic or social climate of adjacent timber-dependent communities.

The additional 31,100 acres was an estimate of the amount of old growth tree habitat that may occur as a result of other management activities and strategies found in roadless and riparian areas. These acres were not reserved specifically to retain old growth habitat, but for other resource management reasons, such as recreational experiences and objectives, fish habitat improvement, and a variety of additional considerations needed to meet management objectives and public concerns and interests.

COMMENT NO. 36. On pages 4-87 to 4-88, the Plan provides for replacement stands for dedicated old growth in the event of catastrophic lost of designated units. Manage using silvicultural prescriptions that will result in uneven-aged stands with large trees. It would seem unlikely that there would be stands available that would even be close to old growth condition, to take the place of lost stands.

FOREST RESPONSE:

As described in Chapter 4 of the Forest Plan, the C1 Management Area provides for the selection of "replacement stands in the most advanced successional stage and in close proximity to the original location in the event of a catastrophic loss of dedicated old growth units." If replacement stands lack the necessary components (such as large trees, etc) for suitable old growth habitat characteristics, some uneven-aged management may be necessary to develop the characteristics as soon as possible. If a catastrophic loss of dedicated old growth habitat occurred early in the planning period, the chance of selecting a suitable replacement stand would be much better than if it occurred later in the planning period. By the end of the fifth decade, most of the undedicated old growth habitat outside of roadless, riparian, and visual management areas may well be gone. Therefore, in part, to reduce the risk of falling below the management requirement level, an additional 25 units have been identified in the FEIS and Forest Plan to insure the long-term viability of wildlife species using this habitat

COMMENT NO. 37: The final Plan should include a mechanism that would allow the Forest to "swap" old growth stands on productive sites for currently uninventoried old growth stands later identified on areas allocated to management for objectives other than full timber production.

FOREST RESPONSE·

The dedicated old growth tree habitat units shown on the maps and tables in the Forest Plan and FEIS were carefully selected based on the established regional direction (see Appendix M). Although not specifically mentioned in the planning documents, the option to "swap" dedicated old growth stands

for currently "uninventoried" stands (once they meet the minimum characteristics of old growth tree habitat) is a viable future alternative, but for the short run, not very probable. It could well be 50 years or more before these "uninventoried" stands develop the required old growth characteristics of large diameter trees, clear evidence of decadence, and abundant dead and down tree material; so any consideration of swapping dedicated old growth units would be well beyond the scope of this Plan and would have to be evaluated during the next planning effort or subsequent revisions of the current Forest Plan

COMMENT NO. 38: According to the Society of American Foresters, there is no evidence that old growth conditions can be reproduced silviculturally.

FOREST RESPONSE:

Since there is little, if any, available evidence that old growth tree habitat conditions can be reproduced silviculturally, the Forest has decided to dedicate both "suitable" and "capable" old growth units with no timber management activities permitted. The Forest is of the opinion that this is the best strategy to maintain old growth habitat through time. In the case of lodgepole pine habitat, however, the management requirement directions specify a component of 10- and 12-inch DBH diameter trees that are not normally found in these stands For this reason, the Forest has proposed applying the C2 strategy (managed old growth) to 3,150 acres of lodgepole pine The area calls for both precommercial and commercial thinning entries during the first 40 years, followed by at least 40 years of no harvest entries. Such a strategy should provide many of the required old growth characteristics for this plant community. Monitoring activities following plan implementation will follow habitat conditions and trends in wildlife populations.

COMMENT NO. 39: The Plan should be more aggressive on salvage logging programs to help extend old growth ponderosa pine resources.

FOREST RESPONSE:

An aggressive timber salvage program in designated old growth habitat units would tend to eliminate at least two of the more important characteristics required to qualify as mature and old growth tree habitat (see Glossary). The two factors are the level of stand decadence and the number of snags available for wildlife habitat An aggressive salvage logging program in designated old growth units would be at odds with the management objective of maintaining biological diversity and a segment of the Forest as old growth tree habitat

COMMENT NO. 40: OHV's (ORV's) and livestock should be prohibited from entering or using C1 Management Areas, in order to fully protect the vegetative structure and terrestrial animal microhabitats.

FOREST RESPONSE.

One of the essential criteria used in selecting dedicated old growth tree habitat units was the absence or low levels of human disturbance evident in the stands, however, for this habitat type to be properly distributed throughout the Forest, some units must necessarily have roads and/or trails running through them While periodic vehicular traffic through the units detracts from their value and may disturb wildlife species, they are the best representatives of old growth habitat available on the Forest. Furthermore, because of the crown closure of 50 percent or more and the amount of dead and down tree material present, these stands have little forage that would attract domestic livestock, and the Forest sees no reason to specifically prohibit the few livestock that may wander into these areas, even though Management Areas C1 and C2 state that grazing is allowed It also states that bedding of sheep in the areas will not normally be allowed. Specifically prohibiting entry would require extensive and costly amounts of fencing or other extraordinary efforts.

DEPENDENT SPECIES

COMMENT NO. 41: The majority of the management indicator species are projected to be managed at MMR levels. MMR determinations are almost always underestimations of habitat required for long-term viability.

Populations should be retained well above the MMR levels Dedicated old growth should be allocated to double the minimum viable populations of old growth dependent wildlife species to provide a reserve to replace unplanned losses.

FOREST RESPONSE.

A significant amount of old growth forest habitat above the management requirement (MR) level in wilderness, roadless, and riparian areas will be retained throughout the Forest This, coupled with the dedicated areas, will maintain old growth tree habitat, and the wildlife species preferring this habitat type, well above the minimum viable population level for most species as analyzed in Appendix M of the FEIS Many of the potential population estimates are also displayed in Tables II-6A and II-8.

COMMENT NO. 42: The 20 percent minimum management requirement specified to maintain viable populations of species of plants and animals dependent on the old growth ecosystem as it exists on the Forest is too low and the Forest should be managed to maintain a much higher population of these species.

FOREST RESPONSE

The 20 percent potential population level is the regional management requirement for the primary cavity nesting species; however, this level is not recommended for any of the management strategies proposed in the Forest Plan or FEIS. Even the most intensive timber management strategy (E1) provides a 40 percent potential population level as the management objective. Forest-wide, the estimated potential population levels are at the 46-68 percent level as displayed in Table II-8.

COMMENT NO. 43: The need to quickly establish indicator species MMR's and substantial preserves for old growth ponderosa pine communities is especially pressing because this community will be most drastically affected by implementation of the timber program of the preferred alternative. NFMA calls for designation of indicator species for such communities.

FOREST RESPONSE.

The regional management requirement directions specify distributional requirements for designated old growth tree habitat. The requirements have been implemented in the selection of the dedicated old growth habitat on the Forest The units are well distributed across the Forest and include a representative sample of all plant communities. NFMA calls for the designation of an adequate number of management indicator species to monitor the effects of management activities. Since most ponderosa pine stands on the Forest contain other coniferous species, such as Douglas-fir and larch, the Forest has made the assumption that the pileated woodpecker, as the management indicator species for these areas, will adequately address the habitat concerns and requirements of other cavity nesting species as described in Appendix M of the FEIS.

COMMENT NO. 44. The DEIS claims in paragraph 1 on page IV-71 that populations of old growth dependent species will decline in proportion to the reduction in acres of old growth habitat This is an invalid assumption since the quality and distribution of old growth are additional major factors A species' population does not necessarily decline linearly with reduction of its habitat.

FOREST RESPONSE

There are a great many factors that can affect the distribution and number of wildlife species The quality and distribution as well as the amount of available habitat are only some of those factors As displayed in Tables II-6A and II-8 and Figures II-D, II-E, and IV-K, the amount of old growth tree habitat available to all wildlife species dependent on, or that make heavy use of, this habitat type will decline significantly over time in all alternatives as a result of timber harvest and other management activities. The potential populations of these species will also decline over time The rate of decline is difficult to estimate, though, and may not necessarily decline linearly with habitat reductions For this reason, the Forest has displayed estimated outputs in terms of "potential populations" that are roughly related to available habitat. The text has been revised accordingly

COMMENT NO. 45: The statements on DEIS page IV-71 regarding old growth species are far too brief, not quantitative, and have no statistical assumptions described.

FOREST RESPONSE:

The statements regarding old growth tree habitats in this section are quite brief, but rely on quantitative information and data presented elsewhere in the DEIS and Forest Plan. The assumptions and much of the quantitative information are listed in Tables II-6, II-7, and II-8, and in the section on Nongame Wildlife in Chapter IV.

MAPPING OF UNITS

COMMENT NO. 46: The Forest has not presented dedicated old growth stands the same on all alternative maps. A comparison of these maps will show that the "amenity" alternatives have representational dedicated old growth while the preferred alternative and other timber-oriented maps show actual, inventoried dedicated old growth. Inventoried, dedicated, and on-the-ground verified—all old growth—should be shown the same on all maps.

FOREST RESPONSE:

*More units of dedicated old growth forest habitat were delineated in DEIS Alternatives **D, E, C,** and **J** than in the remaining alternatives. In many instances, and in order to meet spacing criteria, this required the designation of dedicated units where presently there is no existing old growth habitat. The management requirement criteria required that the designated stand be "capable" of producing old growth habitat characteristics over time. The difference in the maps is the inclusion of more "capable" dedicated old growth units in some of the alternatives. In all alternatives, however, the management requirement level was applied with sufficient existing old growth habitat to meet all spacing, size, and distribution criteria.*

COMMENT NO. 47: The Forest Plan should include a good map indicating the locations of naturally-evolved and managed old growth stands. Maps should be on a scale such that drainage-level details are visible.

FOREST RESPONSE:

The FEIS will include a map (1/4-inch scale) showing the locations of both inventoried and dedicated or managed old growth habitat units Each of the draft alternative maps showed designated old growth habitat units. A set of 7 1/2-minute U S.G S. quadrangle maps, reduced to page size, will be published in a book of maps of the Forest Plan; the maps will display old growth units to be managed under a C1 (Dedicated Old Growth) or C2 (Managed Old Growth) management strategy. Drainage-level detail will be available on these maps.

INVENTORY AND MONITORING

COMMENT NO. 48: Old growth ground truth data is nonexistent. A complete, thorough, and ground-verifiable inventory of all remaining old growth using the land satellite mapping system should be completed this coming summer for inclusion in the final Plan.

FOREST RESPONSE:

An extensive inventory of all existing old growth tree habitat was completed by Forest personnel using aerial photos and on-the-ground knowledge of stand conditions. This inventory was the basis for the information presented in the DEIS The information was reviewed and updated for the FEIS. An inventory of remaining old growth forest habitat was started in 1987 in a Forest Landsat project in cooperation with the University of Washington and the Oregon Department of Fish and Wildlife. Unfortunately, the project has not been completed and the results will not be available for use in the FEIS. In addition, the Forest has initiated an integrated resource inventory, which includes an old growth review. When the Landsat project and the integrated resource inventory are completed and the data are available, the Forest will have a better old growth inventory In addition, as described in Chapter 5 of the Forest Plan, inventory and monitoring of dedicated and managed old growth tree habitats will be initiated as the Forest Plan is implemented. The monitoring process will also track the loss of inventoried old growth habitat through time as a result of timber sale activities

COMMENT NO. 49: Monitoring the best representatives of the remaining habitat units and projecting the results to all other units would not be legitimate. The Forest should make certain that the means to "track" all inventoried, dedicated, and potential old growth is put into place. The final Plan should include an effective monitoring program to assess the impact of timber management activities on old growth dependent wildlife species.

FOREST RESPONSE:

Monitoring of dedicated and managed mature or old growth habitat units is outlined in the Forest monitoring plan in Chapter 5 of the Forest Plan. The monitoring plan specifies that a representative sample of habitat units will be sampled each year Through time all dedicated and managed units will be sampled. The monitoring of all units is required, inasmuch as considerable variability exists in nature and in the quality of the selected stands. Sampling of a few units and extrapolating the results to the remainder of the Forest would not be a rational approach As outlined in the monitoring plan in Chapter 5 of the Forest Plan, significant on-the-ground deviations detected as a part of our monitoring activities would result in a review and/or revisions of the Forest Plan. The general reduction of other remaining nondedicated stands will be done on a district basis to track the loss of the important habitat type through time

COMMENT NO. 50: The final Plan should include a plan for monitoring old growth dependent species.

FOREST RESPONSE:

As described in Chapters III and IV of the FEIS, the Forest has no indigenous wildlife species truly "dependent" on old growth tree habitat, however, a number of species prefer it, or make heavy use of this habitat. The pileated woodpecker and pine marten have been selected as the management indicator species; and as outlined in the monitoring plan in Chapter 5 of the Forest Plan, both their habitat and the individual species will be monitored.

DEAD AND DOWN TREE HABITAT

HABITAT LEVEL

COMMENT NO. 51: Dead and down woody material is increasingly recognized as an important component of the forest ecosystem. Page 50 of the Summary states the proposed Plan will provide snag habitat at 50 percent of population potential for cavity nesters.

The DEIS on page IV-6 shows a majority of your suitable timber acres will be managed at the 80 or 100 percent levels, with the remaining acres managed at the 40 percent level. The 300,000 forested acres on which timber harvest cannot occur are assumed to be managed at a high level of cavity nester habitat How then can an average of 50 percent be obtained—the average would seem considerably higher.

FOREST RESPONSE:

*Table IV-6 of the DEIS displays the suitable timber lands categorized by the two dead and down tree habitat levels considered in the FORPLAN model used to estimate and analyze timber yield reductions. The table excludes all lands that were potentially unavailable for timber management activities. The assumption was also made that dead tree habitat in dedicated old growth tree units would be at the 100 percent potential population level. In the case of Alternative **F**, the 292,000 acres at the 40 percent level and the 344,000 acres at the 80 percent level were applied to the total of about 1,096,025 acres outside of wilderness to yield a Forest-wide estimate of 52 percent of the potential population level for primary cavity users. This is a gross, Forest-wide estimate based on two yield tables developed for the FORPLAN model In actuality the 80 percent level will not be applied to as many acres (344,000) as anticipated in the FORPLAN model. Each management area has a more specific management objective varying from 40 to 100 percent, as described in Appendix D, which will be monitored during implementation of the Forest Plan.*

COMMENT NO. 52. There is little reason that dead and down tree habitat cannot be managed at full potential under Management Area A7 rather than the 80 percent of potential identified on page 4-73 of the proposed Plan.

FOREST RESPONSE:

The primary emphasis of the Wild and Scenic River Management Area (A7) is to provide river-oriented recreational opportunities and to maintain the visual quality of the environment Scheduled timber harvest activities are permitted in the "Scenic" and "Recreational" sections of designated rivers to accomplish the primary management objectives of recreation and visual management The safety of the visiting public is also a primary concern Within these constraints, the Forest agrees that managing the river corridors at the 100 percent level for dead tree habitat is consistent with the primary goals, and the management direction has been revised accordingly

COMMENT NO. 53: It appears the Forest planning model had choices of 40 or 80 percent of habitat potential for cavity nesters on lands allocated to timber production, but did not provide for a choice of 60 percent. Because this latter percentage represents ODFW's goal for cavity habitat on these lands, it is especially important that this choice be represented in your model and that the implications of requiring at least 60 percent on all timber-suitable lands be described.

FOREST RESPONSE:

*The 40 and 80 percent habitat potential levels were the only two yield tables developed for use in FORPLAN modeling. The Forest, however, was not constrained at the 40 or 80 percent level, or any other level of habitat potential that could be selected for various alternatives. The regionally-established management requirement is 20 percent of the potential population level (see Appendix M in the FEIS) However, all management areas developed in the planning process had an objective for dead tree habitat at or above the 40 percent (varying from the 40 to 100 percent) level, as described for the management areas included in Appendix D. In Table II-8, Alternatives **J**, **F/M**, **D**, **G**, and **E/M** meet or exceed the estimated Forest-wide average of a 60 percent level recommended by the Oregon Department of Fish and Wildlife. Many of the management strategies utilized in developing the management alternatives are at, or well above, the 60 percent potential level as described in Appendix D of the EIS.*

COMMENT NO. 54: Under Management Area C5, snag habitat will be managed at 100 percent as defined by Thomas (1979). Thomas identified minimum snag densities that can be used to support populations of primary cavity excavators at 100 percent levels The Forest has provided no assurance that these snag levels are typical of unmanaged stands and can support other cavity users at 100 percent of potential or provide the woody debris to the channels

FOREST RESPONSE:

Very often, natural conditions are not "optimal" for wildlife species and are incapable of providing sufficient habitat to maintain wildlife populations at 100 percent of their potential. The management objective for the Riparian Management Strategy (C5), as described in Appendix D of the FEIS, is to provide sufficient dead and down tree habitat to maintain primary cavity excavators at 100 percent of the potential population level. In riparian areas that presently do not have sufficient snags to maintain this level, the Forest will create and/or manage to provide the appropriate numbers of snags. This does not imply, however, that all snag-deficient riparian areas will be brought up to 100 percent of their potential "overnight" following the initiation of the approved Forest Plan. As C5 (Riparian) Management Areas are inventoried, and as funding becomes available, snag densities will be created or managed to provide no less than the number needed to maintain primary cavity excavators at 100 percent of the potential population level.

COMMENT NO. 55: Required per-acre snag density standards should be established in consultation with the Washington Department of Wildlife or the Oregon Department of Fish and Wildlife, and should be implemented Forest-wide. "An average of 180 hard snags per 100 acres with at least 10 inches DBH and an average of 2 hard snags per acre greater than 10 inches DBH" will be maintained. This standard seems to advocate both 1.8 and 2.0 hard snags per acre.

FOREST RESPONSE.

Both the Oregon Department of Fish and Wildlife and the Washington Department of Wildlife have provided written and verbal input regarding the need for dead tree habitat and their desired objective levels for this habitat component Their desire is to provide sufficient dead tree habitat to maintain 60 percent of the maximum potential population level for species dependent on this habitat Their comments have been carefully considered in the development of the Forest-wide Standards and Guidelines and the array of management strategies as discussed in Appendix D of the FEIS. The developed strategies provide a wide range of objectives ranging from a low of 40 percent of the potential population, as required by Forest Service written direction (FSM 2630.3, Supp. 45), to a high of 100 percent. The Forest-wide level as a result of the implementation of Alternative F/M was estimated at about 65 percent (see Table II-8).

The comment refers to Management Area C2. The management area has been revised to read, "an average of 225 hard snags per 100 acres, 12 inches dbh, in mixed conifer and ponderosa pine stands (15 of those hard snags will be greater than 20 inches DBH) and an average of 2 hard snags per acre greater than 10 inches DBH in lodgepole pine stands."

COMMENT NO. 56: We see no mention of the benefits of down timber (especially large logs) for moisture retention, nitrogen source, shade, soil retention, and other benefits as mentioned by Thomas and Moser.

FOREST RESPONSE:

Although not specifically mentioned in the draft, the Forest certainly recognized the importance of dead and down, large woody material as important in the recycling of nitrogen in the forest environment, the symbiotic association of certain fungi with roots of vascular plants, as an important source of food for both invertebrate and vertebrate wildlife, as habitat for many wildlife species, and a host of other values For these reasons, the Forest-wide Standards and Guidelines and other management direction have provided for the retention of no less than two down logs per acre 16 feet long and 10 inches in diameter at the small end, as a minimum level of down material Many of the benefits of down material are included in the publications listed in the References section of the FEIS The Forest-wide Standards and Guidelines in Appendix D of the FEIS have been revised to more clearly indicate these values.

COMMENT NO. 57: If some areas cannot have greater-than-minimum snag levels, how will the Forest produce a Forest-wide average equal to the minimum, given the fact that past logging has eradicated snags from vast areas? The Forest Plan should be examined to determine if enough snags are provided Forest-wide and not just in old growth areas The stated goal for snag retention on page 4-42 (proposed Plan) of only 20 percent on most Forest lands is far too low. Most wildlife experts agree that 60 percent of potential densities

is the minimum retention level to assure viable populations of snag-dependent species. Snag-retention mandates should be raised to the 60 percent level on all Forest lands.

FOREST RESPONSE:

As displayed in Appendix D of the FEIS and Chapter 4 of the Forest Plan, each management area has a management objective level for snags (dead and down tree habitat). Although the management requirement for snags is at the 20 percent level, none of the areas utilized this, but instead selected much higher percentages (ranging from 40 to 100 percent) of the potential population level. While past timber harvest activities may have reduced some areas below the proposed objective levels, other areas—such as roadless areas, riparian habitats, old growth areas, wilderness, or other areas—are well above these levels. Where subsequent monitoring activities indicate snag levels are below the management objective target, green trees will be girdled or the tops "blown out" to provide the needed snag levels. Forest-wide, Alternative F/M resulted in an estimated objective level of about 65 percent of the potential population level, as described in Table II-8, which is well above the management requirement level of 20 percent.

COMMENT NO. 58: If state worker safety standards governing logging activities hamper the provision of adequate snag populations on lands to be harvested, then it is incumbent on the Forest to develop and implement modifications to its timber management program that will address this situation. If it is necessary to reduce the size and density of harvested units, then that is what should be done.

FOREST RESPONSE.

The creation or retention levels for dead and down tree habitat will depend on the specific cavity nesting population objectives for each management area Appropriate and/or mitigating measures will be taken to assure that the required snag densities are met and, as discussed in Chapter IV of the FEIS, will include reducing the size and density of harvest units.

COMMENT NO. 59. Why would dead and down tree habitat be managed at only 40 percent of potential in Management Area A3, but at 80 percent in Management Area A4 (viewsheds)?

FOREST RESPONSE:

The Forest direction for Management Areas A3, A4, and A5 has been revised in Appendix D of the FEIS to include the retention of dead and down tree habitat at the 60 percent level.

COMMENT NO. 60: There is no reason that in Management Area C7—a management area supposedly devoted to fish protection—wood management cannot emphasize 100 percent of the dead and down tree habitat potential unless it is presently degraded.

FOREST RESPONSE:

The riparian area portion of the management area direction has no scheduled timber harvest, and available dead tree habitat should be close to the 100 percent level On the remainder of the area, however, scheduled timber harvest activities are permitted with a full range of silvicultural practices and intensities available, consistent with the need to enhance anadromous fish habitat and with the fact that many of the proposed C7 areas on the Forest have serious insect damage problems The need to salvage much of the timber would make maintaining snag levels at 100 percent of the potential population level very difficult, or impossible, during this planning cycle

COMMENT NO. 61 The Forest should take action to regenerate snags on portions of the Forest that do not contain adequate numbers of snags

FOREST RESPONSE:

In order to meet stated management objectives specified in the Forest-wide Standards and Guidelines and in the Management Areas in Appendix D of the FEIS, the Forest is providing additional and/or

replacement snags on timber sale areas through wildlife habitat improvement plans. Two typical methods are (1) marking and protecting live cull trees that will soon die and (2) leaving green trees that will be killed when the slash is burned in harvest units. As the Forest Plan is implemented, the level at which snags may be created will depend on future monitoring activities and demonstrated snag-deficient areas as applied to the objectives for cavity nesters in each management area. Where additional dead tree habitat is needed, live or green trees will be girdled or the "tops blown out" to provide proper levels of future needed habitats

COMMENT NO. 62: The Forest should adopt a Forest-wide prohibition of the cutting of snags for fuelwood by private or commercial harvesters and see that it is strictly enforced. This should include a clear strategy in the Forest-wide Standards and Guidelines and a strong monitoring and enforcement program, including a sharp increase in fines and enforcement patrols and an active road closure program.

FOREST RESPONSE:

Three of the four districts on the Forest presently have restrictions affecting the cutting of standing dead trees. Policies regarding the cutting of firewood will, however, continue to vary from year to year within the constraints of meeting the management objectives outlined in the Management Areas in Appendix D of the FEIS. Each year the ranger districts develop fuelwood cutting plans and maps of areas to be included in the program. The annual fuelwood cutting plans will be guided by the management direction in the Forest Plan, and wherever the number of snags is deficient, an area will be excluded from the program and additional restrictions on fuelwood cutting will be included

CONDITION AND USE

929
COMMENT NO. 63: Fire dramatically affects the physical properties of woody material and its use by wildlife (Thomas 1979, p. 85). Given this information, it is very questionable whether the UNF has appropriately considered all essential factors when planning for the protection of its wildlife and estimating the true percent of habitat potential.

FOREST RESPONSE:

As indicated, fire significantly affects the physical properties of down woody material and its subsequent use by a variety of wildlife species In recognition of the need for uncharred, down logs to be maintained for use by wildlife species, the Forest-wide Standards and Guidelines and Management Areas in Appendix D of the FEIS have been revised to include these needs. Chapter IV has also been updated to include the consequences of the removal of slash and a prescribed burning program, on small mammals and other wildlife species that use dead and down tree material extensively.

COMMENT NO. 64: Why would there need to be a regulation to leave large dead and down woody material "at four, uncharred Class I or Class II logs per acre"? None of this material should be removed by logging or wood gathering.

FOREST RESPONSE:

As described in the Management Area C5 (riparian), the large, dead and down tree material left at the rate of four "uncharred" logs per acre is not only essential habitat for a host of wildlife species, but also important for the long-term productivity of the forest community. Without this management goal, much of the material is removed by firewood cutters, piled and burned as part of the post-sale fuel treatments, or is "charred" to varying degrees by post-treatment prescribed fire This management area guideline for the riparian areas is needed in order to maintain adequate levels of this important habitat type as described in "Wildlife Habitats in Managed Forests - the Blue Mountains of Oregon and Washington" (Thomas and others 1979)

COMMENT NO. 65: On page 4-42 the Plan should provide specific standards on protecting raptor nest sites. For example, goshawk literature recommends a 30-acre, no-cut island around each active nest and no

disturbance from mid-April to late August. If osprey are present, specific standards should be provided to require large snags near stream/lake feeding areas

FOREST RESPONSE:

As described in the Forest-wide Standards and Guidelines in Appendix D of the FEIS, all raptor nesting sites "will be protected from human disturbance during the nesting period." Fifteen different raptorial species nest on the Forest The level of protection required will vary by the species involved and will be sufficient to adequately protect the nest site as determined from available literature and current management direction. The Forest sees no need to list the specific standards of raptor nest site protection for each of the 15 species.

COMMENT NO. 66: How will the Forest hope to provide for the needs of the cavity nesting species that require large diameter ponderosa pine as primary habitat?

FOREST RESPONSE:

Large diameter (over 20 inches DBH) ponderosa pine will be provided as outlined in the Wildlife section of Chapter 4 of the Forest Plan and in Appendix D of the FEIS. A proportional amount of ponderosa pine in dedicated old growth tree units has been set aside for wildlife use A given percent of existing, satisfactory cover containing larger diameter pine on winter ranges and grass-tree mosaic (GTM) areas will be maintained as part of the C3 and C8 Management Areas. Other management areas, such as A7 (Wild and Scenic Rivers) and A8 (Scenic Areas), will also provide for large diameter ponderosa pine as suitable habitat for cavity users.

COMMENT NO. 67: Why do wildlife habitat standards not include any mention of secondary cavity users?

FOREST RESPONSE:

A secondary cavity nester is "a species that occupies a cavity in a snag that was excavated by another species." The pine marten is a secondary cavity user and is used as one of the management indicator species on the Forest. The other two species used as indicators of management activities for dead tree and mature/old growth tree habitats on the Forest are primary cavity users As indicated in "Wildlife Habitats in Managed Forests-the Blue Mountains of Oregon and Washington" (Thomas and others 1979), if other forest habitats are managed to maintain the primary cavity users at a given percent of their potential population, the secondary cavity users will be maintained at or above the level of the primary cavity users This assumption is based on the fact that 6 out of 10 primary cavity nesters in the Blue Mountains excavate 2 to 3 (or more) cavities each year as part of their courtship and mating behavior These birds do not use the same nest cavity year after year and, therefore, the old or used cavities are available to be occupied by secondary cavity nesters

COMMENT NO. 68: Are 2 down logs per acre supposed to maintain 80 percent of potential for secondary users?

FOREST RESPONSE:

As outlined in the Forest-wide Standards and Guidelines in Appendix D of the FEIS, "two down logs per acre at least 16 feet in length and 12 inches in diameter at the small end" is the Forest best professional judgment of the habitat conditions needed to maintain viable populations of indigenous wildlife species. The judgment of minimum standards required in all alternatives is based on available, local research and publications, such as "Wildlife Habitats in Managed Forests" (Thomas and others 1979). Many areas of the Forest, such as in riparian areas, designated old growth areas, and other important wildlife areas, will have much higher levels of this important habitat

COMMENT NO. 69: What does the Forest consider to be a "high degree" of protection?" Management Area C5 provides that "timber will be managed on a scheduled basis and that a full range of silvicultural practices and intensities is permitted." Is this considered to be an example of a "high degree of protection"?

FOREST RESPONSE:

As described in Appendix D of the FEIS, the Riparian/Wildlife Management Strategy (C5) is designed to provide a high level of dead and down tree habitat (100 percent of potential population levels), retention of large down tree materials (20 feet or more in length), and a high level of habitat effectiveness for both fish and wildlife with emphasis on satisfactory cover for elk (40 feet tall, two canopy layers, and 70 percent crown closures). Some timber harvest activities will also be scheduled in these important wildlife areas. However, as described in the revised C5 Management Area in Appendix D, the emphasis will be on uneven-aged or single tree management prescriptions in order to retain adequate cover and other essential wildlife habitat components.

INVENTORY AND MONITORING

COMMENT NO 70: The ODFW believes past logging has left insufficient snags to maintain cavity nesting species and is unaware of any monitoring of snag retention on the Forest. Are these observations correct? Have they been incorporated into the estimate of cavity nester provisions under each alternative? A Forest-wide inventory of snag levels is needed.

FOREST RESPONSE:

An inventory of dead and down tree habitat was initiated during the field season of 1987 However, due to the extremely busy fire season, only three allocation areas totaling about 34,400 acres were inventoried. The Wildlife section of Chapter III of the FEIS has been revised to include a brief summary of the inventory results. The areas inventoried were those that have been heavily impacted by both timber harvest and fuelwood cutting Overall, the inventory indicated total snag levels at the 10 to 45 percent levels, with the larger diameter snags (over 20 inches DBH) at the 60 to 100 percent levels. As the Forest Plan is implemented, a more intensive monitoring program will be initiated; areas short of snags will require the creation of habitat type by "blowing" tops out of green trees or other effective means.

COMMENT NO. 71: "No data are available on the accumulation of woody debris or the rate of litter fall in forests of the Blue Mountains" (Thomas 1979). What information on this important resource has the Forest collected since this report was published?

FOREST RESPONSE:

No data on rate of litter fall has yet been collected on the Forest. The amount of woody debris (dead and down logs) was included in the snag inventory initiated in 1988. The inventory sample was quite small, however, and has not been included in the data presented A summary report of the results is available.

COMMENT NO. 72. In the FEIS, a snag monitoring program should be included under Dead and Down Tree Habitat (on page II-103 in the draft document).

FOREST RESPONSE:

The monitoring of dead and down tree habitat is outlined in Chapter 5 of the Forest Plan and includes the objectives, methods, frequencies, and reporting periods A sample inventory of three allocation areas comprising about 34,400 acres was completed during the 1987 field season, and a summary report was prepared and is available in the Forest files. The continuation of this monitoring effort will be initiated with the implementation of the Forest Plan.

MANAGEMENT REQUIREMENTS (MR's)

USE OF MANAGEMENT REQUIREMENTS

COMMENT NO. 73: The DEIS did not adequately explain the costs, loss of revenues, and other lost opportunity costs which result from excessive MMR's The need for and total cost of each MMR should be

clearly explained in the Plan. Please explain the following sentence from page II-8 of the DEIS: "Where identical effects resulted, except old growth, the ID team chose the method with the least negative impact on PNV. Does this mean that the old growth "method" with the greatest negative impact on PNV was selected?

FOREST RESPONSE:

All alternatives must necessarily comply with the requirements of applicable legislation and regulations which require maintaining sufficient habitat for viable populations of all existing native vertebrate species. Within the constraints and capabilities of the FORPLAN analysis, the costs (loss of revenues and other opportunity costs) have been displayed or summarized in various sections in Chapter II and Appendix M of the FEIS. The costs are described in Appendix B (Table B-VI-2) and in the Sensitivity Analysis of Significant Forest Management Requirements in Appendix M (Tables M-1 and M-2) The figures in the FEIS have been revised to display the most recent outputs based on changes in the FORPLAN model.

In applying the management requirements to various alternatives, the Forest evaluated different methods of meeting the established requirements When the outputs and effects were essentially the same, the Forest chose, with the one exception of old growth habitat, the method with the least negative impact on the present net value (PNV). In the case of old growth habitat, the Forest elected to use "dedicated" habitat with no scheduled timber entries instead of a "managed" habitat strategy which includes timber harvest entries because it provides a more dependable approach to meeting management objectives, and adjacent forests with similar timber stands have shown it to be more cost-effective.

COMMENT NO. 74. The MMR's on the Forest have imposed significant and unnecessary reductions of the available decision space. For example, the timber benchmark shown on page II-11 of the DEIS appears to have MMR's applied, when the high end benchmark should have been run without MMR's. The MMR's used in the final Plan should be as conservative as possible. If monitoring indicates that the degree of protection is inadequate, the MMR's can always be amended before excessive impacts occur.

FOREST RESPONSE:

In analyzing the effects of various established management requirements and the available decision space as a result of these MR's, the Forest used a number of Benchmark runs as shown in Appendix B of the FEIS (Table B-VI-4). The analysis of available decision space affecting the timber resource used the "maximum present net value" and the "maximum timber" benchmarks, with and without MR's. The difference in opportunity costs, present net-value, and timber volumes as a result of the management requirements is not great A summary of the management requirement constraints is shown in Table B-VI-2 and discussed in Appendix M of the FEIS.

As described in Chapter IV of the FEIS, wildlife populations are often affected on a short-term basis more by weather, disease, and other outside influences than by habitat conditions Monitoring of wildlife and their habitats may often take considerable time before data are able to isolate the cause of any declines in populations; once determinations have been made, much of the available habitat may well be gone. In the case of old growth habitat, another 100-200 years may pass before additional habitat would be available, with possible irreparable effects on the long-term viability of a species. If the Forest is to err in regard to management requirements, it may be more prudent to err on the conservative side. If monitoring eventually indicates the MR constraints are too restrictive, the old growth habitat (or other habitat components) would still be available and could be harvested at that time. The reverse, unfortunately, is not true

COMMENT NO. 75. "With the exception of Alternative E, the implementation of all alternatives will significantly reduce the amount of mature and old growth tree habitat on the Forest with proportional reductions in potential population indices" (DEIS p. IV-65). Based on this statement, the potential numbers for pileated woodpeckers in Table II-6(A) on page II-75 are absurd. These species will not remain constant throughout the 50-year life of the Plan, especially with the rapid decline in old growth and mature forests proposed by several alternatives, including the preferred alternative

FOREST RESPONSE·

*As indicated, most of the alternatives (except for **D, E/M, F/M,** and **J**) will significantly reduce the amount of available mature and old growth tree habitat on the Forest, and potential populations of management indicator species. The potential population reductions are expected to be roughly proportional to losses in the amount of available habitat Since the Forest has no precise way of knowing where the harvest units would be scheduled on-the-ground, the outputs in Table II-6(A), were intended to represent the "end result" (available habitat and potential populations) by the fifth decade The estimated output figures in Table II-6(A) and in the Wildlife section of Chapter IV have been revised in the FEIS to estimate the decadal changes in old growth habitat as a result of timber harvest activities and the resultant estimated potential populations of the management indicator species.*

COMMENT NO. 76: The proposed Plan by definition strongly relies upon a dependent interspecific relationship between pileated woodpeckers and overmature/mature mixed conifer forest habitat in all management areas. No evidence is presented that pileated woodpeckers and other wildlife species which rely heavily on old growth habitat significantly decline in numbers or are reduced below viable population levels "under the max timber and max PNV" benchmark management scenarios (DEIS Appendix B, p. B-76). Apparently there is a flaw in the manner in which the model generates these outputs. The most-frequented habitat for the pileated woodpecker is riparian area; the provision of 27,000 acres of pine and mixed conifer old growth, plus the extra 12,300 acres of the same type shared with pine marten, is without justification in the DEIS (Appendix B, p. B-59). An additional 31,000 acres of pine and mixed conifer old growth type proposed in the preferred alternative for various reasons tends to beg the question of special limited use dedicated areas for pileated woodpecker habitat. This very adaptable primary cavity nester has a very high versatility rating on the Cascade westslope, breeding in 7 different plant communities and 3 stand types, as well as feeding in 12 various plant communities in 5 different stand conditions. This indicates that the Forest pileated woodpecker habitat model and provisions are excessive and probably unnecessary.

FOREST RESPONSE.

By direction, the Forest is required to maintain sufficient habitat to maintain viable populations of all wildlife species, and to maintain both habitat and species diversity As directed by the regional management requirement package summarized in Appendix M of the FEIS, pileated woodpeckers were one of the species selected as a management indicator for mature and old growth tree habitat While this species may be quite adaptable, they do depend to a very large extent on the mature and old growth habitat components of the Forest for trees large enough to provide suitable nest sites. Of necessity, nesting habitat must include trees (preferably a "hard" snag) of sufficient diameter and height to accommodate their nest cavity. Literature indicates that preferred trees are at least 20 inches in diameter and 35 feet in height (Thomas and others 1979).

The management requirement (MR) package direction, as described in the Forest-wide Standards and Guidelines in Appendix D, also indicates that pileated woodpecker habitat shall be distributed throughout the Forest so that roughly each 12,500 acre unit of the Forest (approximately a 5-mile distribution) contains at least one suitable habitat block of 300 acres. The Forest estimate of the MR level for pileated woodpeckers is 27,900 acres outside of wilderness. MR levels are also defined for pine marten and three-toed woodpeckers amounting to 9,280 acres and 3,150 acres respectively (outside of wilderness). However, some old growth units overlap and, where possible, the Forest has taken credit for the overlap, which reduces the total amount of old growth needed. Therefore, the estimated management requirement for pileated woodpeckers and pine marten is 32,220 acres and not 37,180 acres. In taking credit for the "overlap" where it occurs, the Forest has assumed a somewhat greater risk in providing for the long-term genetic viability of the species. However, the management requirements provide adequate protection and distribution of important habitat to maintain the long-term viability of all wildlife species Without the MR habitat requirements, pileated woodpeckers and other wildlife species would be reduced to very low levels and, in the Forest's opinion, be reduced below viable population levels over time. The benchmark analyses discussed in Appendix B confirm this opinion and indicate that, without the MR constraints, pileated woodpecker populations are reduced below minimum viable levels over time (Benchmarks 1 and 3).

COMMENT NO 77: The Forest should reduce its MMR constraints prior to the FEIS publication, in accordance with Secretary MacCleery's direction, and make the land allocation corrections as necessary

based on the new MMR's. This will also allow the development of MMR's in a public process, providing for adequate and informed public comment as required by NEPA and the Administrative Procedures Act.

FOREST RESPONSE:

The direction from the Department of Agriculture was not necessarily to reduce the management requirement constraints, but to reanalyze the requirements, the cost of applying the constraints, alternative ways of applying them, and the effects on other resources. The result of this direction was the preparation of Appendix M (Sensitivity Analysis of Significant Forest Management Requirements) of the FEIS. The rationale, development procedures, costs, and results are displayed in that Appendix. As part of the planning process, the public had an opportunity to comment or provide input to the management requirement constraints outlined in Appendices D and M of the DEIS. The two sections have been revised in the FEIS to include much of the public input and to more clearly define the constraints and the various costs and effects on other resources.

COMMENT NO. 78: The MMR's used in the DEIS are not based on solid scientific research, specific to Forest circumstances, nor are the research needs of the Forest identified. For example, thermal cover is maintained as an MMR by the Forest after it was dropped by Region 6 without any explanation, scientific justification, or alternative being presented in the DEIS.

FOREST RESPONSE:

The development of the regional management requirements summarized in Appendix M of the FEIS relies heavily on available scientific research and printed materials. Some of this information is included in the References section of the FEIS. As new or additional research findings become available, the management requirements can and will be updated or changed. The Forest also recognizes a number of voids in the information or data needed to answer specific problems Information, Inventory and Research needs were identified in the last section of Chapter 2 of the Forest Plan. Additional needs have since been identified and have been added to the list in the Forest Plan.

Regarding the question of thermal or satisfactory cover, this important habitat component is not identified as a management requirement needed to maintain viable populations of elk or other big game species Satisfactory cover is, however, an important component of big game habitat, and extensive research in the Blue Mountains clearly demonstrates a big game preference for the cover. For this reason, the Forest has identified the need to maintain certain levels of cover on winter ranges and utilized the maintenance of 10 percent satisfactory cover as a "discretionary" constraint for all winter ranges Benchmark runs without this constraint projected the virtual removal of all satisfactory cover on identified winter ranges within two decades.

COMMENT NO. 79: The recent changes, both in the indicator species themselves and in the dispersal distances, in response to the USDA request for "flexibility," appear to be suspect since a Region 6 task force did not identify any new data to account for the loosening of restrictions.

FOREST RESPONSE:

Some changes in the regional management requirements have occurred since they were first developed in 1983. However, the Forest has had no changes in either the selected species or total number of management indicator species, or major changes in the general location of dedicated habitat units As an example, the original management requirement for pileated woodpeckers was 300-acre old growth units distributed at 5-mile intervals throughout the Forest This distribution constraint has since been altered to indicate that at least one 300-acre old growth unit will be provided for each 12,500 acre unit of area within the Forest, which is essentially a 5-mile distributional pattern. The change permits some of the units to be closer than 5 miles apart and some to be farther apart, but it changed neither the number nor the general distribution of the units on the Forest Where some voids appeared in the distribution in the DEIS, about 25 additional dedicated old growth habitat units have been added in the FEIS and Forest Plan

COMMENT NO 80: MMR levels for resource protection have been exceeded throughout most of the alternatives offered for consideration by the Forest Old growth in the preferred alternative is to be managed

at 189 percent of the MMR level. The FORPLAN formulation has no prescriptions that manage for 20 percent snag retention; 40 percent and 80 percent are the only retention levels modeled.

FOREST RESPONSE:

*Several of the management alternatives considered in the DEIS (particularly Alternatives **A, B, F, G, H,** and **I**) were modeled at, or only slightly above, the management requirement level for old growth habitat (see Figure IV-M) The Forest also recognized that additional acres of existing or potential old growth habitat occur in the roadless and riparian areas over time without scheduled timber harvest, and estimated how many acres may be involved, which explains the 89 percent above MR levels (see Table II-8). The acres are not necessarily "fixed" in time and place and could vary in amount from year to year, thereby not necessarily meeting the distribution requirements outlined in the management requirement package Accordingly, the Forest feels the need to at least maintain (and preferably exceed) the MR levels.*

In the case of dead and down tree habitat, the MR level is 20 percent of the potential population However, there is Forest Service written direction (FSM 2630.3) to maintain at least the 40 percent level, and all alternatives reflect this direction in order to assure the long-term maintenance of viable populations of cavity-dependent wildlife species Furthermore, the analysis done by the Forest has indicated there is "no cost" in terms of timber volumes as a result of maintaining the 40 percent level. At the MR level of 20 percent, there is no margin for error or accounting for the possibility of catastrophic loss of habitat through fire, insects, or disease.

COMMENT NO. 81. The Plan should include the effects of managing MMR's at minimum levels in the analysis of MMR tradeoffs

FOREST RESPONSE:

The analysis and tradeoffs of managing old growth tree habitat and other management requirements at the minimum level are included in Chapter IV and in Appendices B and M of the FEIS. Some changes have been made in these sections to reflect FORPLAN runs and outputs and to include public input to the planning process.

COMMENT NO. 82: The FEIS should present the current direction alternative both with and without MMR's to illustrate the full effect of such constraints As pointed out by the Oregon State Department of Forestry, differences in minimum management requirements between the "no change" and the DEIS alternative provide important comparisons that were not available in the DEIS.

FOREST RESPONSE:

Present laws and regulations require the maintenance of viable populations of all wildlife species The management requirement constraints were developed to insure that adequate amounts of habitat would be provided to accomplish this objective. All alternatives must necessarily be viable proposals and, therefore, must include the MR constraints. Several of the benchmarks, however, were run with and without the MR constraints in order to analyze the impacts of such direction as described in Appendix B of the FEIS. The Current Direction Alternative was modeled with the management requirement constraints Existing unit plans form the basis of the Current Direction Alternative, which includes the management requirement directions However, since the unit plans and the Current Direction Alternative are equivalent in terms of the inclusion of management requirements, no specific or additional comparisons are needed

COMMENT NO. 83: MMR levels were never intended to be management levels, but were to be used in benchmark analysis and in the No Action Alternative.

FOREST RESPONSE.

The management requirements displayed in Appendix D of the FEIS are the Region's and Forest's best estimates of the necessary management and constraints to maintain long-term, viable populations of all wildlife species and other resource values as required by existing laws and regulations. Although

management requirements provide the "floor" or minimum habitat levels below which no alternative may fall, they meet all the legal or planning directions and could be used as management levels. The MR's are therefore required as an integral part of all proposed management objectives and must be included in each viable management alternative. In several of the benchmark runs, however, a number of analyses were done without the management requirements in order to determine their effects on timber harvest and other resources. This information is analyzed and displayed in Appendices B and M.

COMMENT NO 84: The Forest should consider all other alternatives to achieving the same objectives as MMR's. These should be displayed with the costs and benefits included, directly comparing them to the selected MMR's.

FOREST RESPONSE:

Several alternatives and options have been considered in Appendix M of the FEIS as the Forest analyzed each of the management requirements. Costs and benefits to other resources were also considered and evaluated in Appendix B of the FEIS and summarized in Chapter 2 of the Forest Plan

COMMENT NO. 85: MMR standards need to be made even more stringent and comprehensive if true biological diversity is to be preserved on the Forest. Uncertainty in MMR sensitivity is more likely to result in an underestimation of the protections required. The assumption of 100 percent occupancy rates in management indicator (MI) species habitat areas is extremely unrealistic and underestimates the required habitat. MMR guidelines must err on the side of caution to assure that adequate habitat for each MI species is preserved and that the viable populations required by law are maintained.

FOREST RESPONSE:

It is true that scientific unknowns and uncertainties in developing wildlife standards may result in an underestimation of the amount, distribution, and protection required to maintain the biological and long-term viability of wildlife populations and their diversity. Also true is that available habitat is seldom, if ever, 100 percent occupied by wildlife. The management requirement standards were developed using the best available information and research publications to insure the long-term genetic viability and diversity of the management indicator species For this reason, 25 additional old growth habitat units have been added, and higher-than-MR levels for dead and down tree habitat have been applied in the FEIS and Forest Plan. Monitoring activities will closely track habitat conditions and population trends of the indicator species, and any significant changes outlined in Chapter 5 of the Forest Plan will result in changes in management direction or activities

COMMENT NO. 86 It is unclear what is meant by the phrase "at or near the MMR level" in the DEIS. Is this plus/minus 5, 10, or 50 percent? The MMR's should be increased to provide in perpetuity for viable and healthy populations of wildlife, not just the bare minimum the Forest proposes for a particular species.

FOREST RESPONSE.

*The estimated management requirement level for old growth tree habitat on the Forest is 35,370 acres outside of wilderness. The "at or near MMR level," as described in Chapter IV and seen in Figure IV-L of the DEIS, varies from a high of about 1,425 acres above (4 percent) in Alternative **G** to a low of about 265 acres above (0 7 percent) in Alternative **F**. The "at or near MR level" is relative to these values and refers only to the dedicated old growth habitat units. As further described in Chapter IV, there is an estimated 47,000 to 143,000 acres of "other potential" old growth habitat available in roadless and riparian areas*

In response to public input, and in order to fill some voids in the distribution of dedicated old growth tree habitat, an additional 25 units have been added to the selected alternative in the FEIS The narrative and accompanying table in Chapter IV of the FEIS have been altered to reflect these changes. As described in Tables II-6 and II-8, dead and down tree habitat for cavity users and the Habitat Effectiveness Index (HEI) for big game are both well above the management requirement levels and should provide sufficient habitats to maintain viable and healthy populations of wildlife on the Forest.

COMMENT NO 87. The Forest has reduced all old growth MIS numbers due to overlap. Further, in all alternatives MMR numbers for all species were "adjusted" to include overlap with other land allocations that could provide mature or old growth habitat. There are several concerns with these methods. The Forest has chosen MMR levels and then further reduced them due to overlap Overlap of finite, discrete units of habitat designed to maintain all old-growth related species will force predators and prey into concentrated areas and may increase competition and predation on prey species In addition, this overlap of MMR species with other MMR species, as well as overlap of MMR habitats with other land allocations, provides no opportunity for replacement of habitats due to catastrophe Nor does it account for the fact that not all areas will be occupied by a species at any one time. For some species at low population levels, habitat occupancy at about 50 percent is typical. Effective populations, then, need to be calculated in terms of all relevant parameters.

FOREST RESPONSE.

Based on old growth unit size and distributional requirements outlined in the regional management requirement directions, the Forest determined the number of old growth units for each of the identified management indicator species Units were drawn on maps with considerations for a variety of plant community types, elevations, slopes, and habitat types In considering the habitat needs of the indicator species, the Forest made the decision that a 300-acre pileated woodpecker unit could also serve the needs of a 160-acre pine marten unit, where both would fall within the same habitat and distribution guidelines (see Appendix M of the FEIS) Thus the total number of old growth habitat units needed to meet management requirements was not reduced, but some of the units were considered as meeting the requirements of both pileated woodpeckers and pine marten. Further, the amount, size and widespread distribution of the dedicated old growth habitat units should be sufficient to reduce the chance of concentrating predators within a small area and increasing their hunting efficiency. Monitoring activities will follow these relationships.

It is true that habitat occupancy at 50-60 percent is typical. For this reason, the Forest has added about 25 additional dedicated old growth units to fill in distributional voids and to alleviate the problem. As fires, insects, diseases, or other catastrophic events reduce the number of the habitat units, replacements will be designated where necessary and as described in Appendix D of the FEIS and Chapter 4 of the Forest Plan

COMMENT NO. 88: It is very questionable whether the Forest MMR level of habitat will be adequately distributed to provide for diversity and to sustain dependent wildlife populations.

FOREST RESPONSE:

The Forest-wide Standards and Guidelines and Management Strategies included in Appendix D of the FEIS were carefully developed using published research and the best available information, Regional guidelines, and a Forest interdisciplinary process in order to adequately protect essential habitats for all indigenous wildlife species However, because of the uncertainty associated with maintaining long-term, genetic viability of wildlife species, and the fact that some of the dedicated units are not currently suitable old growth habitat, the FEIS has been revised to include an additional 25 dedicated old growth habitat units. The Forest believes the established Forest-wide Standards and Guidelines will provide both species and vegetative diversity through the implementation of the Forest Plan. Appendix D has also been revised to include more specific Forest-wide standards for maintaining habitat and species diversity

COMMENT NO. 89: The DEIS should list all species of wildlife that are dependent on snags for all or part of their life cycle and indicate how these species will be maintained on the Forest Many of these species may not be adequately covered by the cavity excavator MMR's.

FOREST RESPONSE·

In the Blue Mountains, 62 bird and mammal species utilize dead and down tree (snags) habitat and cavities in order to nest and reproduce. The Forest has neither the funds nor personnel to monitor each species; therefore, the concept of management indicator species, as described in Appendix M of the FEIS (if these indicator species are properly selected and identified), has been implemented, and should adequately provide for the habitat requirements of most other species. Inasmuch as one of the limiting habitat factors is the absence of the larger diameter (over 21 inches DBH) trees, the pileated

woodpecker was selected as a management indicator. Larger diameter trees can be substituted for the required number of smaller diameter trees as described in "Wildlife Habitats in Managed Forests" (Thomas and others 1979). The habitat requirements of the pileated woodpeckers should provide for the needs of most other dead and down tree dependent species. As also specified in Appendix D, the Forest-wide Standards and Guidelines and Management Strategies each have a dead tree habitat objective level that will be maintained for both primary and secondary cavity users

COMMENT NO. 90. Paragraph 2 on DEIS page IV-55 discusses impacts to wildlife due to increased livestock grazing. Because of the critical importance of riparian and wet meadow habitats to wildlife, these habitats should be designated special management areas. To insure adequate protection of these habitats, MMR's should be developed and included in the final document.

FOREST RESPONSE:

The Forest-wide Standards and Guidelines included in Appendix D of the FEIS specify the recognition and protection of riparian areas, as well as seeps, springs, bogs, marshes, and other wet areas generally fewer than 10 acres in size. In addition, management strategy C5 (riparian/wildlife) also recognizes the inherent value of these habitats to all wildlife species by providing high levels of dead and down tree habitat and satisfactory cover, and a high HEI value for elk. Utilization standards regarding the removal of available forage by domestic livestock have also been revised to provide for improved range conditions. Directions involving timber management activities have been revised to emphasize individual tree selection or uneven-aged silvicultural treatments in order to achieve the stated objectives.

MANAGEMENT INDICATOR SPECIES

COMMENT NO. 91. The Umatilla has selected wildlife management indicator species for certain forest habitats. It did not analyze any alternatives to the indicator species selected Because the Umatilla failed to evaluate alternatives for indicator species, and because monitoring will be difficult if not impossible, the Forest should carefully reconsider its selection of indicator species and, at a minimum, provide an explanation and scientific justification for selection of such species. The indicator species approach to assessing wildlife viability in relation to species habitats is a theoretical model of questionable validity. The levels of habitat change which become problems for wide-ranging species may be well above the thresholds for species with smaller area requirements. The three MMR indicator species of concern in this report (spotted owl, pine marten, and pileated woodpecker) are presumed to need old growth It is highly unlikely that trends in populations of the three indicator species, as affected by management, reflect similar trends in other species.

FOREST RESPONSE:

The regional management indicator species selection process involved an interdisciplinary team process working with legislative and Regional directions and guidelines A brief overview of the process is described in the Wildlife section of Chapter III and in Appendix M of the FEIS. More detailed analyses are discussed in a Forest process paper (No 12) available at the Supervisor's Office Because of realistic personnel and budget constraints, the intent was to carefully select the best, but smallest, group of wildlife species that could effectively serve as indicators of all management activities for the broadest possible range of indigenous wildlife species on the Forest The Forest recognizes many of the problems inherent in using a small group of indicator species to represent the habitat needs of all wildlife species, but neither can the Forest monitor all (or most or even many) of the species that are found here. The intent is to monitor the effects of management activities on a small group of indicator species, and adjust activities or practices as adverse effects are detected. Additional information regarding the selection of management indicator species, and a range of costs involved in providing minimum habitat requirements for these species, are discussed in Appendix M

COMMENT NO 92: How do the overlapping requirements of the three cavity excavators sort out as a unified standard? When minimum snag diameters are 10 and 12 inches and minimum habitat unit acreage varies from 75 to 300 acres, what will the result look like?

FOREST RESPONSE:

The dead and down tree habitat requirements for cavity excavators are outlined in each of the management strategies as described in Appendix D in the FEIS. The objectives are described in terms of the number, type, and size of snags needed to meet a percentage of the maximum potential population (varying from the 40 to 100 percent level) as described in "Wildlife Habitats in Managed Forests-the Blue Mountains of Oregon and Washington" (Thomas and others 1979). The larger-diameter snags may substitute for smaller-diameter snags, but the reverse is not true. As an example at the 40 percent level, 90 snags per 100 acres are needed, and all 90 may be in the 20-inch diameter class where a minimum of 5 snags in the 20-inch DBH class is required Additional snags in the 10- and 12-inch diameter class may not be substituted for the 20-inch diameter component The number of snags required will be distributed throughout the Forest and not relegated to wilderness or to the 75- to 300-acre old growth units. Recent regional direction specifies that each local timber harvest unit (no larger that 40 acres) will have the required number of snags arranged in patches or clumps. This direction has been added to the Forest-wide Standards and Guidelines in Appendix D

COMMENT NO. 93: For the use of habitat calculations to have any semblance of meaning, especially given the likely prospect that the Forest will not soon verify the biological suitability for its standards, the known preferences for optimum habitat must be provided. The management of nongame species appears to be conducted more by dictating the conditions to which species must adapt rather than by assessing the requirements of the species.

FOREST RESPONSE:

In the development of the regional management requirements, the known or published habitat needs and/or preferences for all indicator species were reviewed and taken into consideration. A list of some of the references is included in the FEIS. Habitat requirements are described in the management requirement package and summarized in Appendix M of the FEIS. As the Forest Plan is implemented on-the-ground, monitoring activities will verify these habitat needs which may result in changes in the future

COMMENT NO. 94: Conspicuously lacking from the Plan are any indicator species for the grass-tree mosaic communities. The Plan should identify such indicators and their MMR's in the Forest Plan.

FOREST RESPONSE:

The grass-tree mosaic (GTM) areas identified in the Forest Plan are not a function of "plant communities" so much as an ecological type based on soil, slope, and location All of the areas involve identified big game winter range (with minor amounts of summer range) and are generally open grasslands interspersed with patches or narrow stringers of timber. The Forest is unaware of any wildlife species directly dependent on this habitat or that would serve as a good management indicator in the GTM. Where available, a proportionate share of old growth tree habitat has been identified in the GTM for which management indicator species have been identified. The monitoring plan in Chapter 5 of the Forest Plan has also outlined the inventory and trend surveys to be conducted in these areas.

COMMENT NO. 95: Has the Forest done any population surveys to establish the relationship between cavity-excavating species population sizes and variations in the habitat characteristics which serve as standards and guidelines?

FOREST RESPONSE:

The Forest has inventory information for three allocation areas (subwatersheds) widely scattered throughout the Forest. This inventory was conducted in 1987 to make some estimates of where the Forest was in terms of existing snags, available tree species, diameter classes, and their distribution within the allocation areas A summary report of the results of the inventory is available at the Forest Service office in Pendleton No Forest-specific correlations have been developed between the availability of dead tree habitats and populations. The Forest has initially relied on research activities conducted at the Pacific Northwest Range and Wildlife Experiment Station at La Grande and "Wildlife Habitats in Managed Forests" (Thomas and others 1979) for much of this information. Forest-specific

correlations will be developed through time as part of the Forest monitoring plan summarized in Chapter 5 of the Forest Plan. Research and information needs are also recognized and listed in Chapter 2 of the Forest Plan.

COMMENT NO. 96: A literature review related to the pine marten suggests that a grid-like pattern of 160-acre habitat areas distributed within 4,000-5,000 acre units (3 miles apart) may be inadequate for marten in some areas because habitat quality varies with topography. Individual sites may be successful if they are located on mesic slopes and include riparian zones. In some areas of the Forest it is possible that north and south slopes may be the only areas expected to attract marten under most conditions. Also, the fact that marten dwell in dense lodgepole stands in some areas suggests that old growth, per se, may not be required. This review indicated that total area of suitable habitat may be more critical than distribution, which seems to be an overriding feature of the Plan. Therefore, the Forest should consider providing for marten on a broader basis than on 160-acre habitat areas, assuming that high-elevation areas already reserved from timber harvest will provide the nucleus for a viable population and that the managed forest allows for juvenile dispersal. If the marten is primarily a climax forest species, it is unlikely that seral stage V would satisfy its needs. With such small home ranges (1.50 km for males and 0.43 km for females), it is unlikely that populations would maintain continuity, given an average 3-mile distribution distance of their habitats.

FOREST RESPONSE:

The pine marten habitat areas selected included a variety of habitat types involving variations in topography, slope, and elevation, and were selected from inventoried old growth habitat (seral stage VI) with mature tree habitats (seral stage V) selected only when the other was not available. In the view of the Forest, the dedicated units (58 in total) should be adequate to provide for the long-term viability of the species. A number of roadless areas and 131 dedicated pileated woodpecker units have been retained or set aside, in addition to the riparian areas and other portions of the Forest where few, if any, management activities are scheduled. The additional areas provide a degree of habitat for the pine marten and allow for juvenile dispersion.

The home range of pine marten in other studies has been variously estimated at between 16 and 40 kilometers in diameter. Nonetheless, assuming one male and two females for each dedicated old growth habitat unit (together with the outward movement of juveniles to other available habitat units), adequate dispersion should be available to insure the long-term genetic viability of the species on the Forest with a 3-mile distribution of the habitat units. The size and distribution of pine marten habitat units were selected based on the best available information. As the selected units are monitored through time, a better information base will be established on which to make any changes that may be needed in the future.

COMMENT NO. 97: Given the history of the Oregon Coast Range (an area that has been heavily logged but is not densely populated), what makes the Forest believe that it can maintain viable populations of pine martens outside of wildernesses with its proposed logging plans?

FOREST RESPONSE:

Much of the Oregon Coast Range is in private ownership, and is managed primarily for timber without the opportunity for widespread public review and involvement in the management objectives. In contrast, the Forest planning process relies heavily on public involvement in the recognition of issues and management concerns, and in the development of management direction to address these concerns. Throughout the entire Forest planning process and the development of the Forest-wide Standards and Guidelines and Management Strategies, dedicated old growth habitat units have been provided throughout the Forest as areas of adequate distribution and size to be used by pine marten and other solitary wildlife species (without scheduled timber harvest and other management activities). Refer to Appendices D and M of the FEIS.

COMMENT NO. 98. The pine marten is a reclusive animal, and only a few sightings of it have been confirmed on the entire Forest. The NFMA requirements for monitoring indicator species cannot be achieved with this species.

FOREST RESPONSE:

While it is true the pine marten is a "reclusive" species and is not easily or frequently observed, the Forest believes the species, population trends, and its habitat can and will be monitored on a yearly basis, as described in the monitoring plan in Chapter 5 of the Forest Plan Both actual sightings and tracks during the winter months will indicate the relative numbers of animals and trends in their population within each dedicated old growth unit, as well as the general distribution of the species.

COMMENT NO. 99: Because of its close proximity to central Idaho and because of the large roadless areas on the Forest, particularly in the north, the Forest should use the wolf as a management indicator species.

The list of indicator species includes no large predatory mammals. The California wolverine, cougar, and bobcat should be added to the list and allocated MMR and Management Area standards.

FOREST RESPONSE:

As described in Appendix M of the FEIS, to be an effective management indicator a species must be present in sufficient numbers to be easily monitored and its habitat requirements representative of a large group of other species.

There has been only one "documented" occurrence of gray wolf on the Forest in the form of a set of "tracks" near Twin Butte on the Walla Walla District in 1974. No confirmed sightings have been recorded nor have any additional tracks been seen, therefore, the Rocky Mountain gray wolf would not be a good or effective indicator of management activities. It is, however, a "sensitive" species and will receive special attention in terms of recorded sightings and proposed management activities that may affect its habitat.

Although the wolverine, cougar, and bobcat are all present on the Forest, their numbers are relatively low and are difficult to monitor Further, the Forest does not feel they would effectively indicate the effects of proposed management activities.

INVENTORY AND MONITORING

COMMENT NO. 100: The Plan should specify what steps will be taken to develop data on MMR species, and should specify the cost thereof.

FOREST RESPONSE:

During the planning process, a number of information and/or research needs were identified and listed in Chapter 2 of the Forest Plan As other research needs are identified, they will be added. A monitoring plan has also been developed, as presented in Chapter 5 of the Plan, that displays the species, inventory techniques, frequencies, and estimated costs involved in collecting data on the habitat conditions and population trends of indicator species. As monitoring and inventory data are collected and evaluated, changes or revisions in the management direction of the Forest Plan may be required.

COMMENT NO. 101: The proposed programs of monitoring periods for wildlife species are far too long, and mitigation measures are highly nonspecific.

FOREST RESPONSE:

The monitoring plan summarized in Chapter 5 of the Forest Plan specifies surveys and the annual gathering of information for each of the management indicator species. However, because of time, available personnel, and budget constraints, only a specified sample of the available habitat will be monitored each year, with the entire Forest being sampled every 5-year period. The mitigation measures described in Chapter IV of the FEIS have been revised to include more specificity and will be further revised, if necessary, to address any problems that may be encountered during the annual monitoring activities

COMMENT NO. 102: It is not clear that adequate inventories have been conducted for the depth and breadth of habitat conditions, as well as populations, for management indicator species other than elk. It would be helpful to know current populations and habitat conditions, so that future monitoring efforts have some basis for evaluation. Will monitoring for indicator species be good enough to raise the red flag, and when will it be raised?

FOREST RESPONSE:

By law, all state wildlife agencies have the responsibility to manage resident wildlife species and to maintain population estimates The Forest Service, in turn, is charged with managing or providing suitable and adequate habitats for all indigenous wildlife species Where state agencies have collected or maintained wildlife population data, and where the Forest has inventories of existing habitat conditions, these are described in Table II-8 and Chapter III of the FEIS. There are many nongame, small mammal, and other wildlife species, however, for which little information is presently available. As the Plan is implemented, habitat conditions and/or population trends of all management indicator species will be monitored, as described in the monitoring plan summarized in Chapter 5 of the Forest Plan. Changes in habitat conditions and/or the management indicator population trends that would require revisions in the Plan or in proposed management activities are also listed in the monitoring plan.

BIG GAME

HABITAT CONDITIONS AND POPULATIONS

MANAGEMENT CONCERNS

COMMENT NO 1: In reference to the Plan on page 4-21, how will "proper implementation" be achieved? Who will be responsible for implementation?

FOREST RESPONSE:

The implementation of the Forest Plan will be directed by the Forest-wide Standards and Guidelines and the individual management strategies outlined in Appendix D of the FEIS as they are applied on the ground to specific projects. During the implementation of the Plan, the effects of management activities will be closely monitored as outlined in the monitoring plan in Chapter 5, and changes or revisions in the Plan and/or management activities will be incorporated as needed. Implementation is the responsibility of the Forest Supervisor and District Rangers.

COMMENT NO 2: Enough land should be provided in Management Areas C3, C4, and C5 to assure viable populations of all big game species.

FOREST RESPONSE:

Legislative and forest planning direction require the protection, retention, or management of sufficient habitat to maintain viable populations of all indigenous wildlife species A detailed discussion of the management requirements needed to meet this direction is included in Appendix M of the FEIS. The land acreages allocated to the various management areas (including C3, C4 and C5) are included in Table 4-11 of the Forest Plan and discussed and analyzed in Chapter IV of the FEIS. Sufficient habitat acreages have been retained or protected in all management alternatives to maintain wildlife populations well above minimum viable population levels, as shown in FEIS Table II-4.

COMMENT NO. 3: The big game cover requirements of Management Area C5 should apply to Management Area C6.

FOREST RESPONSE:

The purpose for two different management areas is to provide options in riparian management. Management Areas C5 and C6 are both intended to enhance habitat conditions for resident and anadromous fish, and to improve water quality by providing high levels of streamside shading and cover. They differ, however, in that C5 is also intended to enhance habitat conditions for big game and other wildlife species by providing a "high level of satisfactory cover for big game, and high levels of dead and down tree habitat for primary cavity excavators and many other wildlife species." C6 is not designed with big game as a main focus. The wording in the FEIS and Forest Plan has been revised to more clearly reflect the differences

COMMENT NO. 4: It would be helpful to know current population and habitat conditions, so that future monitoring efforts have some basis for evaluation.

FOREST RESPONSE:

The current and available information regarding estimated wildlife populations and habitat conditions are summarized in Table II-8 and described in Chapter III of the FEIS. Portions of the narrative included in Chapter III have been revised to include additional available information regarding the condition of big game winter ranges

ELK NUMBERS AND HABITAT

COMMENT NO. 5 The final Plan should clearly disclose the scientific uncertainty involved in the Forest estimates of wildlife populations

FOREST RESPONSE:

As described in the Wildlife section of Chapter IV in the FEIS, there is uncertainty in any estimate of wildlife populations. The projections displayed in Tables II-6 and II-8, and in Figure Plate IV-J, are not "actual" elk numbers, but are expressed in terms of "potential" elk populations based on projected habitat capabilities or effectiveness. The FEIS and Forest Plan have been reworded to clearly reflect this fact, and to explain that the elk and other wildlife numbers presented throughout the Forest Plan are merely estimates, not actual numbers

COMMENT NO. 6· Under Big Game on page III-32 the final Plan should display the number of deer and elk needed to meet each state's objectives and display the current population levels.

FOREST RESPONSE:

Under the Wildlife section of Chapter III of the FEIS, the Forest-wide state population management objective for elk and deer is listed. This section has also been revised to include more specific information on individual winter ranges Most recent elk numbers are displayed in Table II-6A and the FEIS has been revised to include the appropriate numbers for mule deer.

COMMENT NO. 7: The Umatilla EIS is generally a very comprehensive report and covers most issues of controversy. It needs to include information concerning nongame wildlife as compared to other Forest uses. As important as deer and elk are to this Forest, an inordinate amount of space is given to these species in the documents—to the near exclusion of other species of wildlife on the Forest.

FOREST RESPONSE·

Big game hunting measured in Wildlife User Day's (WUD's) accounts for about 48 percent of all the recreational use occurring on the Forest. Big game species (elk and deer) and the management of their habitat on the Forest is an extremely important public issue and a concern identified early in the planning process; the time and space taken in the planning documents is a reflection of that public interest. This effort, however, in no way diminishes the importance or concern for the protection and management of other resident wildlife species. Much of the Forest-wide Standards and Guidelines and wildlife direction in the management areas, included in Appendix D, deal with other wildlife species and provide adequate levels of old growth tree habitat, dead and down tree material, and other important habitat components

COMMENT NO. 8: After documenting the probable decline of the elk herd on the Forest, the documents try to dismiss the importance of this event. The significance is not that elk numbers for the preferred alternative at decade 5 are about 6 percent below the state population management objectives; the significance is the 40-year decline, with a high point around the end of the first decade, and a steady decline during the life of the Plan. Based on extrapolations from Figure Plate IV-K2 on page IV-64, the elk population will drop below the -10 percent state management objective within another 20 years beyond decade 5.

FOREST RESPONSE:

Projecting potential big game and other wildlife populations 30 to 50 years into the future in response to changes in habitat conditions is extremely difficult, at best. However, based on the assumptions discussed in Chapter IV of the FEIS and the kinds and amounts of cover, roads, and other habitat conditions "tracked" in the FORPLAN model; the "potential" elk numbers displayed in Table II-6A and Figure Plate IV-J are our best estimates On a short-term basis, wildlife populations can be affected as much by weather, disease, predation, and hunting pressures as by habitat conditions. In addition, the available data is probably not very reliable. Extrapolations beyond the fifth decade are even more uncertain and therefore, are not shown. Nevertheless, our expectations are that after the existing natural

forest stands are harvested and regenerated, the amounts of available cover will increase and "potential" populations of big game will show a moderate increase after the fifth decade

COMMENT NO. 9: The Forest Service proposed plans for managing the Umatilla National Forest for the next 10 years do not meet the needs of citizens in terms of wildlife. The Forest should increase big game populations to keep a high success ratio, and increase current capacity levels in order to accommodate the existing large numbers and projected demand of hunters.

FOREST RESPONSE:

The Oregon Department of Fish and Wildlife established big game population management goals in 1980 as a result of considerable coordination between state wildlife agencies in Oregon and Washington, and these decisions involved numerous public meetings and both verbal and written input. Some of the issues considered in setting these goals included:

- *The carrying capacity of both summer and winter ranges on National Forest System lands;*
- *habitat needs of other big game species (i.e., mule deer, white-tail deer, and bighorn sheep);*
- *public demand for other existing big game species;*
- *the existing problem of elk damage on private land; and*
- *livestock grazing.*

Significant increases in elk populations may have unacceptable adverse impacts on one or all of the above items, as well as on other Forest resources. The effects of alternatives with higher projected elk population index increases are discussed in FEIS Chapter IV

*The development of the DEIS and Forest Plan has involved public input at various key stages. Several years ago the general public assisted in developing the key issues, concerns, and management opportunities described in Chapter I of the FEIS. In order to address these issues and concerns, the Forest has carefully developed a list of Forest-wide Standards and Guidelines, the management areas (see Appendix D), and a wide range of management alternatives. Based on public input throughout the planning process, and the range of resource outputs displayed in the DEIS, Alternative **F** was selected as the preferred alternative. Although this alternative does not produce the highest wildlife outputs, it does provide for effective resolution of the wide range of public issues and concerns addressed in Chapter II. Alternative **F** maintains potential elk numbers above state management objective levels through the first two decades, with old growth and dead tree habitats well above management requirement levels. As a result of the public comment on the draft documents, the FORPLAN model and other planning items have been revised for the FEIS in order to provide better information and "track" essential resource projections. The selected alternative, **F/M** displayed in the FEIS, responds to the wildlife and other public issues and management concerns identified early in the planning process and during the draft stage.*

COMMENT NO. 10: Viable elk herds thrive in places where no tree cover exists at all, including such inhospitable places as Wyoming's Red Desert, the Hanford Reservation, and Mt. St. Helens in Washington State. The existence of viable herds in such places clearly suggests that thermal cover may not be a critical habitat component at all as long as the animals have adequate forage and protection from disturbances by human beings.

Research information does not support the hypothesis that deer and elk require thermal cover for survival.

"Thermal energy emanating from. cover can only serve to reduce heat loss; sufficient food must be available for basal energy requirements and for the activity of the animal. Thus food must be considered the basic requirement, and cover becomes physiologically important only when its presence is necessary to maintain a positive energy balance" (Moen 1966).

FOREST RESPONSE

Several publications indicate that "under conditions of infrequent disturbance and adequate forage, elk can be successful in habitats with limited thermal or security cover." The elk at the Hanford Reservation are not hunted and exist under conditions of infrequent disturbance. Elk and other big game species on the Forest, however, do not exist under conditions of infrequent disturbance, but are heavily

"stressed" prior to the winter months during an active and prolonged hunting season extending from mid-September through mid-December. In the Forest Plan and FEIS, the Forest has relied on available research from the Blue Mountains and the Pacific Northwest Research Station in La Grande According to Thomas and others (1979 and 1988), elk have demonstrated a distinct preference for satisfactory (thermal) cover when it is available. In the management areas emphasizing elk and other big game species, the Forest has provided adequate amounts of satisfactory cover in terms of specific objectives and in the habitat effectiveness model.

COMMENT NO. 11: The FEIS should contain an inventory of critical habitats (e.g , elk summer and winter range). Condition of these habitats should be discussed, as well as the estimated costs of restoring them.

FOREST RESPONSE:

The Wildlife section of Chapter III in the FEIS has been revised to display a summary of the extensive 1982 survey results for the nontimbered portions of each of the 21 identified big game winter ranges on the Forest.

Preliminary inventories of dead and down tree habitats in three allocation areas (subwatersheds) amounting to about 34,400 acres were also initiated during the 1987 field season. A brief summary of the results of this survey has also been included in Chapter III of the FEIS. Additional inventory and monitoring activities will be initiated as the Forest Plan is implemented. Monitoring of old growth habitat, dead and down tree habitat, and riparian areas will be done. The monitoring frequencies, techniques, reporting periods, and costs are summarized in the Forest Plan, Chapter 5. Integrated resource inventories are scheduled for old growth and riparian areas and are shown in Appendix A of the Forest Plan.

COMMENT NO. 12: The final Plan should (1), emphasize direct habitat improvement projects to provide quality forage for both cattle and big game; and (2), utilize temporary road closures to provide habitat security and quality hunting opportunities.

FOREST RESPONSE:

As discussed in the Wildlife section of Chapter IV of the FEIS, timber harvest activities can affect wildlife habitats more quickly and perhaps more profoundly than any other management activity, including the implementation of direct habitat improvement projects For this reason, the constraints included in the management areas (particularly C3, C4, C5, and C8) and the Forest-wide Standards and Guidelines included in Appendix D of the FEIS are designed to protect and/or maintain wildlife habitats through time. Direct wildlife habitat improvement projects, however, are an important management objective in enhancing and improving existing conditions The objectives have been recognized in the FEIS and Forest Plan, and a discussion of proposed projects, their effects on wildlife, and their proposed budgets are included in Chapter IV of the FEIS and Appendix A of the Forest Plan. Many of the planned improvement projects involve prescribed burning on big game winter ranges for forage enhancements. A discussion of road closures and their effects on wildlife habitats is also included in detail in Chapter IV of the FEIS.

COMMENT NO. 13: The Plan would be improved by noting that the topographic locations of vegetation that provide winter cover are important. Benches, slopes, and ridges with good cold air drainage seem to be important to elk in winter and should receive emphasis Leaving conifers in cold air pockets in drainages is unnecessary because such sites are seldom used for cover.

FOREST RESPONSE:

The Forest recognizes the value of topographic relief in providing cover for big game species during certain periods of the year The value of topographic relief as cover, however, cannot be modeled in FORPLAN and can only be handled on a case-by-case basis in the field during project planning During periods of extreme cold, conifers in "cold-air" pockets are seldom used by big game However, at other times during the year with warmer temperatures and high winds, big game species make relatively heavy use of conifer pockets Generally, available cover on winter ranges is limited and certain minimum levels of the cover need to be retained as outlined in the Forest-wide Standards and Guidelines.

DEER NUMBERS AND HABITAT

COMMENT NO. 14: Since the stated goal of big game habitat management on page II-42 is to maintain and enhance wildlife populations, it is conspicuous that there is no explanation offered as to why the Plan states that "deer numbers have been declining for several years and are well below population objectives." It appears that the mule deer population is being displaced by the unrealistically-high population management objectives being maintained for Rocky Mountain elk.

FOREST RESPONSE:

Many factors affect big game and other wildlife population levels aside from habitat conditions. Such factors as weather, predation, and disease all play a big role in wild animal populations. In the case of mule deer on the Forest, as indicated in the Big Game section of Chapter III of the FEIS, populations declined significantly during the early to mid-1980s. The primary reason for their decline was the occurrence of several consecutive severe winters with deep snows and cold weather, which resulted in the loss of adults as well as drastically reduced fawn survival The Big Game section of Chapter III has been rewritten to reflect this information. Regarding the displacement of deer by elk, normally the two species do not directly compete for available habitat Very high elk densities in a given area, however, could cause some decline in deer numbers

BIGHORN SHEEP NUMBERS AND HABITAT

COMMENT NO. 15: The Forest should cancel, or at least postpone, the proposed introduction of California bighorn sheep to this area, at least until a full-scale study can be conducted to assess the environmental effects of this introduction on the native plant communities and numerous sensitive plant species found on the Forest.

FOREST RESPONSE:

The reintroduction or herd augmentation of California bighorn sheep, or any other wildlife species, requires an environmental assessment. That assessment would evaluate the impacts on all resources, including sensitive plants and native plant communities. Although the Oregon Department of Fish and Wildlife has proposed introductions of California bighorns on public lands within the influence area of the Forest itself, there are no proposed introductions planned for the Forest All of the proposed reintroductions or herd augmentations involve Rocky Mountain bighorn sheep.

HABITAT EFFECTIVENESS INDEX (HEI)

COMMENT NO. 16: Monitoring of big game habitat effectiveness will be done by "analysis of forage/cover ratios and open road miles by allocation zones." In addition, the UNF should analyze the size and spatial distribution of these units, the condition of migration routes (even though they may cut across several management units), and now the interaction of management unit qualities produce overall habitat effectiveness. On page II-104 the habitat effectiveness rating for big game should include the size and spatial distribution of forage and cover vegetation.

FOREST RESPONSE:

The elk habitat effectiveness model used in estimating outputs displayed in the planning documents involved the quadratic mean of the product of (1) total available cover, (2) quality of available cover (amount of satisfactory and marginal cover), and (3) the number of miles of roads open to vehicular travel (HEI = [HE cover x HE quality x HE roads] 1/3) The process is explained in far more detail in a planning process paper (No 53) available at the Forest Supervisor's office.

As the Forest Plan is implemented, and individual timber sales are planned and laid out on-the-ground on big game summer ranges, the essential components, such as migrational corridors, cover size, and spacing criteria, will be analyzed and displayed in project EA documents using the model components

(HEI = [HE size/spacing x HE quality x HE roads]1/3)

Within designated big game winter ranges a fourth habitat factor (forage) will be analyzed and considered in the HEI model Size and spacing criteria are most important, and will not be overlooked in the analysis of big game habitat conditions related to timber harvest activities. However, they cannot be "tracked" in the FORPLAN model, and are not included in the outputs displayed in the FEIS and Forest Plan.

COMMENT NO. 17: The DEIS states that, for all alternatives, the assumption was made that potential big game populations are "directly proportional to the habitat effectiveness index (HEI) for elk" (IV-55). This is an inappropriate assumption that should not be used in the FEIS. It is entirely possible that, aside from certain critical parameters, relatively large increases or decreases in habitat effectiveness indices will have little, if any, effect on elk populations

FOREST RESPONSE:

As described in the introduction of the Wildlife section of Chapter IV of the FEIS, populations of elk, as well as many other wildlife populations, are more often affected by weather, disease, predation, hunting pressures, and other influences far more than by habitat conditions Although influenced by land management practices and habitat conditions, these factors, are often cyclic and beyond the scope of the Forest Plan, and therefore were not considered in the habitat models The Forest is keenly aware of the problems of relating "actual" elk numbers directly to a habitat effectiveness index However, both regional and national planning direction require tracking and outputs in terms of animal numbers and trends in populations. When the DEIS was completed big game populations were "relatively" high, near the state management objective for elk; habitat effectiveness was estimated for the Forest. The Forest has made the assumption that big game populations were "in balance" with existing habitat conditions, and that any changes in habitat conditions would result in proportional changes in "potential" populations. Therefore, the outputs displayed in Tables II-6 and II-8, Figure Plates IV-J1 and J2, and elsewhere in the FEIS are not "actual" elk numbers, but more accurately described as "potential" population indices based on habitat capabilities, as described throughout the FEIS and Forest Plan.

COMMENT NO. 18. What is the reason for managing elk habitat at 30 percent effectiveness in Management Strategy E1 on page D-73?

FOREST RESPONSE:

As described in Appendix D of the FEIS, the management objective and emphasis for lands under an E1 management strategy is production of wood fiber and livestock forage. Management considerations for elk and their habitat will be made, but at significantly lower levels than will be assigned other management areas (such as C4) The 30 percent Habitat Effectiveness Index as outlined in E1 reflects the reduced emphasis. In some cases, however, the actual HEI for an E1 Management Area may be above the minimum level of 30 percent

COMMENT NO. 19: Since deer and elk on many winter ranges in the Blue Mountains use thermal cover, including ponderosa pine, below the 70 percent canopy closure level, the 70 percent standard should not be applied as a hard and fast rule. For winter cover, the model should be based upon a site-specific analysis.

FOREST RESPONSE:

The Forest recognizes that "heavy-use" elk areas do not always meet the 70 percent canopy closure requirements for satisfactory cover; however, a careful review of available literature from the Blue Mountains of Oregon and Washington indicates that elk will exhibit preferential use of satisfactory cover (where it is available) over marginal cover (Thomas and others 1979, 1988) In the Forest Plan, therefore, the management direction is to retain the best habitat possible on winter range areas and to maintain adequate levels of habitat effectiveness on summer ranges

COMMENT NO. 20: Will "HE" decline over the next decade due to removal of thermal cover, allowing too much area as transition range, or because of greatly expanding the road network?

FOREST RESPONSE.

An increase in the Habitat Effectiveness Index (HEI) for elk is projected over the first decade for half of the management alternatives analyzed in the FEIS. The DEIS preferred alternative (Alternative F) showed an increase in HEI, as discussed in Chapter IV in the DEIS and displayed in Figure Plate IV-K1 The FEIS preferred alternative (F/M) and Plan also indicate an increase in HEI during the first decade. Subsequent declines in projected HE indicies is a result of increased road miles and loss of cover

COMMENT NO. 21: What is the current Habitat Effectiveness Index (HEI)?

FOREST RESPONSE:

The current Habitat Effectiveness Index (HEI) is estimated at 68 percent, as displayed in Table II-8 under the column for "Existing Condition" in Chapter II of the FEIS.

COMMENT NO. 22: The FEIS should: (1) Fully document from the available scientific literature what is known about the effects of forest management activities on big game populations, (2) compare the various alternatives only in terms of their effect on calculated HEI's, and (3) fully disclose that the projected differences in HEI's may not be significant in terms of their effect on actual elk populations.

FOREST RESPONSE:

The Forest recognizes the existence of a variety of research findings, and that differing conclusions and uncertainties might arise as a result of different findings. The bibliography included in the FEIS lists a number of source references related to big game habitat conditions and timber management. The Forest has relied on information and research findings from the Blue Mountains of Oregon and Washington (Thomas and others 1979, 1988) as a basis for much of the elk habitat information and models used in the Forest Plan.

The various proposed management alternatives are analyzed, discussed, and compared with respect to projected Habitat Effectiveness Indices (HEI's) in Chapter IV of the FEIS and are displayed in Table II-6(A). Appropriate sections of the document have also been revised to more clearly explain the difference between "potential" elk populations projected from HEI calculations and "actual" elk numbers and the levels of uncertainties associated with these projections

COMMENT NO. 23: Forest-wide "HE" estimates can produce misleading numbers and mask declining habitat on parts of the Forest. Habitat effectiveness should be estimated for geographic subdivisions of the Forest, such as watersheds or big game management units; and the size and spacing of cover should be considered in these estimates. Averaging HEI by management unit to produce a Forest-wide HE would not be a legitimate approach.

FOREST RESPONSE:

The Forest recognizes the need to analyze and estimate Habitat Effectiveness Indices (HEI's) on smaller areas of landscape, and that Forest-wide estimates of HEI can produce misleading projections for specific portions of the Forest The Forest-wide HEI values are developed primarily to assist in the comparison of management alternatives.

The Forest planning effort identified 131 allocation areas or subwatersheds averaging about 8,400 acres in size During the implementation of the Forest Plan, HEI's will be calculated and monitored through time on the basis of the individual allocation areas. At this smaller level of geographic resolution, the HEI calculation will be more precise and much more meaningful As outlined in the monitoring plan in Chapter 5 of the Forest Plan, any significant variations from management area standards and/or the projected or anticipated effects may result in changes in management activities or planning direction.

COMMENT NO. 24: The habitat effectiveness model does not appear to have considered timber harvesting over the last 30 years.

FOREST RESPONSE:

The habitat effectiveness model used in estimating current conditions utilized information regarding the available amounts of big game cover and the miles of existing roads on the Forest As such, the HEI model does account for all management activities (including timber harvest and road construction) over the past 30 years. Furthermore, in the FEIS the Forest has updated the timber sale program to reflect harvest activities through 1988 Timber stands (cover areas), however, are dynamic and changing all the time. Therefore, the model also recognizes site potential for growing new cover stands after harvest with the potential of attaining marginal cover criteria within 20 years after harvest.

COMMENT NO. 25: It is not appropriate to consider a riparian zone as an isolated area by itself on which to calculate elk habitat effectiveness. Does elk habitat in riparian zones mean a given forage/cover ratio with respect to the Forest?

FOREST RESPONSE:

Since riparian areas are generally long and narrow, monitoring of a Habitat Effectiveness Index would be difficult and not very meaningful. Primarily for this reason, the C5 and other riparian management areas do not have a habitat effectiveness objective. Instead, the objective is to emphasize or maintain high levels of satisfactory cover within the riparian area Habitat Effectiveness Indices and monitoring will be calculated on much larger areas such as allocation areas or subwatersheds that average about 8,400 acres in size, or on entire winter ranges

Forage and cover ratios are an indirect product of habitat effectiveness calculations. The 60/40 forage to cover ratio often referred to as "optimum" habitat for elk assumes one very important consideration—that the cover and forage components are properly sized and distributed. Given the proper spacial arrangement of cover and forage, the 60/40 ratio was a "by product." As stated in the publication "Wildlife Habitats in Managed Forests" (Thomas and others 1979), the optimum elk habitat situation in a riparian area is 100 percent of the natural cover available

COMMENT NO. 26: The Plan fails to incorporate any acreage limitation in the thermal cover and hiding cover prescriptions. As the size of the cover area increases beyond 26 acres for hiding cover and 60 acres for thermal cover, the effectiveness decreases Therefore, the prescriptions should place size limitations on these cover areas.

FOREST RESPONSE:

Distance from edge criteria and size of forage/cover units is described in the Forest-wide Standards and Guidelines and management areas contained in Appendix D of the FEIS, and follows the directions and guidelines presented in Wildlife Habitats in Managed Forests (Thomas and others 1979), and "Habitat Effectiveness for Elk on Blue Mountain Winter Ranges" (Thomas and others 1988). As such, the recognition of cover units smaller than 26 acres or larger than 60 acres has been considered and is included in the management directions. Maximum unit size has been described in the Regional Guide (1984) and is expressed in the Forest-wide Standards and Guidelines; exceptions are also described.

COMMENT NO. 27: Size and spacing of cover and forage for elk should be addressed in the final EIS.

FOREST RESPONSE:

Size and spacing of cover and forage units for big game species have been addressed in the management areas included in Appendix D of the FEIS, and will be implemented on-the-ground as timber sale areas are planned and designed in the field.

COMMENT NO. 28· The 50-year requirement to produce thermal cover improperly defines elk thermal cover as requiring trees of 40-foot heights, canopy closure of 70 percent, and multiple-storied stands. This last is

not one of the requirements specified by Thomas. The thermal cover should be recalculated, deleting the multiple-storied stand requirement.

FOREST RESPONSE:

While the definition on page 2 of "Habitat Effectiveness Index for Elk on Blue Mountain Winter Ranges" (Thomas and others 1988) does not include the need for multi-storied stands, the diagram on page 3 (Figure 1) clearly indicates the need for this component to qualify as satisfactory cover. This and other available publications have shown elk prefer multi-storied canopies when available; thus the assumptions made in the DEIS appear to be well founded and substantiated by available research. The Forest intends to maintain the two-storied stand criterion as an important attribute of satisfactory cover.

COMMENT NO. 29: The thermal cover definitions used in the different strategies do not agree. The definition used in F4 and C4 is different from the definition used in C3 and C8.

FOREST RESPONSE:

Except for the size of units, the definition of satisfactory (thermal) cover is the same for all management areas. However, on winter ranges (C3, C3A, and C8) satisfactory cover is much more limiting than on summer ranges and all available cover, there, regardless of size, is utilized to a greater degree. Therefore, satisfactory cover on winter ranges may be no less than 10 acres in size and 600 feet wide. Satisfactory cover on summer ranges (C4, E1, E2, and F4A) is much more extensive and available, and the cover units preferred by elk are generally larger. The wording for the management areas has been revised in the FEIS to clarify the differences.

COMMENT NO. 30: The guideline to maintain thermal cover of at least 40 feet in height seems to be an attempt to establish a minimum stand height objective for a logging program.

FOREST RESPONSE:

The criteria for satisfactory (thermal) cover are comprised of stands not less than 40 feet in height and a canopy closure of 70 percent with two or more canopy layers (as described by Thomas and others 1988). Marginal cover stands may be 10-40 feet in height with canopy closures of 40-69 percent, and have only one canopy layer. The definitions describe minimum criteria to meet the primary management objective for big game habitat. The criteria are not intended to establish minimum stand heights for a timber harvest program The height criteria, as part of the Habitat Effectiveness Index, helps provide for the proper amounts of cover (at least minimum levels of cover quality), the proper distribution of cover, and a well-planned road management program.

ELK/TIMBER RELATIONSHIPS

COMMENT NO. 31: The composite graph, Figure III-A on page III-32, is accompanied by an erroneous interpretation on the same page. Without assuming that there is a direct proportional relationship between timber and elk harvests, the statement that "...there is no statistically significant correlation among these factors" is not credible because these two resource harvests do track very well. Regardless of the statistical tests, it certainly is reasonable to infer that timber harvesting has a few significant negative effects on elk population. It would be more interesting to see a plot of timber harvest area in acres with total elk population and total elk harvest over time.

FOREST RESPONSE:

As explained in the narrative under Big Game in Chapter III of the FEIS, Figure III-A clearly portrays a "general" upward trend in the amount of timber harvested, elk populations, and numbers of hunters on the Forest between about 1950 and 1978. During the first 10 to 15 years of this period, the amount of "forage" areas was limiting in terms of a habitat effectiveness index Timber harvest activities undoubtedly increased the amount of forage areas available, the size and spacing of both cover and forage, and increased the amount of habitat "edge." Elk numbers responded to improved habitat conditions and the trend in their populations was "up " Despite the general "upward" trend in the figures,

a danger exists in extrapolating long-range projections that continued increases in timber harvest activities would result in increased elk populations and hunter numbers. A statistical analysis of the data demonstrates that there is no significant correlation between timber harvest and elk numbers on a yearly basis and a more careful examination of the chart makes this apparent. In some years, harvest levels may be up while elk numbers declined. The reverse situation, where timber harvest levels are down in some years and elk numbers are up, is also evident.

COMMENT NO. 32: Although timber harvest can create a short-term benefit for big game by providing forage in areas with adequate cover, the discussion in paragraph 8 on page IV-173 should be expanded to address the long-term adverse impact on big game that results from excessive removal of hiding and thermal cover.

FOREST RESPONSE:

*The direct, indirect, and cumulative impacts of the proposed timber harvest activities have been discussed in considerable detail in the Wildlife section of Chapter IV of the FEIS. The loss of cover and estimated changes in potential populations have also been discussed in Chapter IV and displayed in Figure Plates IV-G, I, and J of the FEIS. As shown, Alternatives **I**, **A**, and **H**, those with highest timber harvest levels, have the greatest impacts on "potential" elk populations.*

COMMENT NO. 33: The analysis of big game management on the Forest should be reexamined and refined. The present analysis shows so little response to changes in management direction that it is almost useless for evaluating the tradeoffs between timber production and elk production. It seems incredible that the Forest would exchange such a large reduction in timber production for almost no gain in elk production. The Forest analysis shows that there is no link between the proposed timber harvest level and elk numbers.

FOREST RESPONSE:

The correlation between timber harvest levels and big game "potential" population levels is difficult to estimate. The Forest recognizes that deer and elk populations do not always "track" with changes in either the level of timber harvesting or summer range habitat quality Factors, such as winter severity, inter-specific competition, off-Forest or private land damage, state harvest objectives, and other factors all combine to determine the actual big game population levels.

The Forest is attempting to manage a level of habitat for big game that will provide for deer and elk populations commensurate with state management objectives. In each of the management alternatives analyzed in the FEIS, the Forest-wide Standards and Guidelines and constraints described in the management areas in Appendix D are applied An intensive "road closure" program, retention of satisfactory cover conditions on winter ranges and in riparian and roadless areas, and big game habitat improvement projects are only some of the constraints that serve to limit the variation in potential wildlife populations between alternatives. Because of these constraints, the differences in "potential" elk numbers are not great In the Benchmark FORPLAN runs, however, where many of these constraints were not applied, the differences were much greater. There is, therefore, only a "weak link" between the proposed timber harvest program and loss of cover, and the potential number of elk.

COMMENT NO. 34: The primary concern with the draft Plan's big game management recommendations involves the fact that the planning team chose to impose stringent harvest constraints rather than fully explore alternative management practices designed to harmonize timber management activities and big game management objectives Such constraints cannot be justified based on the current scientific literature.

FOREST RESPONSE:

The Forest Service believes from its review of existing scientific literature that the use of constraints is necessary to meet big game and other wildlife management objectives, as well as objectives for both species and vegetative diversity The Forest recognizes differences in existing literature, but has utilized data from the Blue Mountains of Oregon and Washington (Thomas and others 1979 and 1988) as a basis for the elk model used in our planning effort.

Several changes have been made between the draft and final Plans as the result of reviewing of comments on the elk/timber issue Uneven-aged management has been expanded in some of the management areas (E2, C3, C5) in an attempt to create more flexibility for management activities. Additional management areas (C3A and E2) were also developed to provide greater choices and flexibility in management activities. Further, the FORPLAN model has been restructured to account for the growth of existing cover stands through time, reflected in the FEIS. Chapter IV, the Wildlife section, and Appendix B of the FEIS all include discussions of the results of FORPLAN runs without constraints, showing the critical habitat shortages (particularly winter range cover) that developed within two decades as a result

COMMENT NO. 35: Elk should be recognized as a forest output on an equal basis with timber.

FOREST RESPONSE:

Elk are recognized as a forest output on an equal basis with timber in the Forest Plan and FEIS. Timber management and big game management are often complementary or compatible, particularly on summer ranges, but sometimes they conflict. Both are identified as public issues in Chapter I and are tracked through the entire planning process to resolution; resolution of the issues is a principal driver of the planning process. Development of standards and guidelines, management areas, management requirements, alternatives and initiating measures were developed with both of the issues in mind. For example, in several alternatives and management areas (such as E1), the emphasis is on timber management and livestock grazing, with only the management requirement constraints for other resource values being maintained In other alternatives and management areas (such as C4, C5, etc), the management emphasis is on wildlife species, their habitat, and other resource values. In terms of economic values, both of the resources (timber and wildlife) have assigned or market values that have been used in the analysis of present net value and other economic considerations, as discussed in Appendix B of the FEIS The FEIS and Forest Plan give strong consideration to both the elk and timber resource. Timber management and elk management are often complementary or compatible, particularly on summer ranges, but sometimes they conflict.

COMMENT NO. 36: The statement that even-aged management is better because it creates more edge than uneven-aged stands is not true. Group selection harvests which create many small openings create far more edge per volume harvested than large clearcuts This close arrangement of cover and forage is also better habitat for big game. The Forest refers to Thomas' work on habitats in the Blue Mountains to justify clearcutting winter range even though more recent information shows clearcutting to be undesirable.

FOREST RESPONSE.

Several of the proposed management areas (included in Appendix D of the FEIS) have been revised to include the use of uneven-aged timber management practices and some emphasize use of individual tree or small group selection timber harvest prescriptions (particularly C3 and C5). The effects of the uneven-aged timber management prescriptions on big game and wildlife have been analyzed and are included in Chapter IV of the FEIS.

In managing habitat conditions for deer and elk, and within the context of size and spacing criteria, even-aged management provides edge more often than does uneven-aged management, as described in Chapters 2, 4, and 8 of Wildlife Habitats in Managed Forests (Thomas and others 1979). In most cases, the more abrupt the change from one plant community or successional stage to another, the better the wildlife habitat Even-aged forest management best achieves this condition so long as size and spacing criteria are considered and maintained. In some plant communities, however, the amount of available cover is critical or limiting, and uneven-aged management may well provide better habitat conditions for wildlife, such as in the riparian areas.

COMMENT NO. 37: What will be the standards for created openings?

FOREST RESPONSE:

The established standards for a "created opening," as described in Appendix D of the FEIS, vary depending on the resources and management objectives under consideration For the timber

management practices described in the standards and guidelines and applied to Management Areas E1 and E2, a harvested unit is no longer a created opening when the trees become 4 5 feet tall and the unit is adequately stocked with new trees In a visual management area (A3, A4, and A5), a harvested unit is considered a created opening until the trees become 15 feet tall. When considering conditions for big game habitat, vegetation must be at least 10 feet tall, as described for marginal cover in C4, C3, and elsewhere in the FEIS and Forest Plan.

COMMENT NO. 38: Wildlife biologists have pointed out that timber harvest can have beneficial effects on forage production and improve elk habitat productivity whereas dense timber stands inhibit the growth of understory shrubs, grasses, and forbs (T. Leege, 1984, "Guidelines for evaluating and managing summer elk habitat in northern Idaho," Wildlife Bulletin No 11).

FOREST RESPONSE:

Properly planned and implemented timber harvest activities can be beneficial to elk and deer in terms of providing additional forage, "edge" effects, and other habitat conditions in dense, "unmanaged" forest stands. However, timber management activities have been conducted on both public and private lands for many years, and vast, dense stands of "unmanaged" timber are presently the exception rather than the rule. Past harvest activities may have contributed, in part, to the increases in elk populations shown in Figure III-H of the FEIS.

*Many of the opportunities to enhance potential big game populations and their habitat, however, may have already been utilized. Figure Plates IV-K1 and K2 in Chapter IV of the DEIS estimate "potential" elk populations will increase by an estimated 10 percent during the first decade, or during the first two decades in some alternatives (Alternatives **C, D, E, F,** and **G**). At the present time, adequate cover on the Forest is more of a limiting factor than is available forage. For this reason, the Forest Plan and FEIS have developed guidelines and management constraints to maintain appropriate levels of cover and other desired or essential habitat components for elk and other wildlife species. Estimated potential population levels in the FEIS are not as high as in the DEIS.*

COMMENT NO. 39: Restricting logging activity on the entire Umatilla National Forest during the calving season is unnecessary, but restricting logging in identified major calving areas would be a realistic method for reducing harassment to elk during the calving season.

FOREST RESPONSE:

The Forest has no intention, implied or written, of restricting logging activities on the "entire Forest during the calving season." The Forest-wide Standards and Guidelines in Appendix D of the FEIS, however, have been revised to include direction to protect identified calving areas during the critical calving season.

COMMENT NO. 40. Although timber harvest can create a short-term benefit for big game by providing forage in areas with adequate cover (See DEIS, page IV-173, paragraph 8), this discussion should be expanded to address the long-term, adverse impact on big game that results from excessive removal of hiding and thermal cover.

FOREST RESPONSE:

The Wildlife section of Chapter IV of the FEIS deals with the "maintenance or enhancement of long-term productivity," and recognizes that timber harvest activities can create short-term increases in available forage. The same activities also increase disturbance to wildlife species with the construction of additional roads and in the loss of available cover. The "Unavoidable Adverse Effects" section in Chapter IV has been revised to include these impacts

ELK/LIVESTOCK RELATIONSHIPS

COMMENT NO. 41: Page IV-31 of the DEIS discusses the production of forage for livestock and big game through timber management activities. There is no discussion here concerning the fact that the values of extra forage can be nullified by the impact of the road system required to harvest the timber.

FOREST RESPONSE:

The discussion regarding forage production and utilization in Chapter IV of the FEIS (on page IV-31 of the draft) relates to the use of livestock and, to a lesser degree, the use of wildlife as a tool for vegetation management on transitory ranges. The long-term and cumulative impacts of timber harvest programs and road construction and use on big game and other wildlife species are discussed in considerable detail in the Wildlife/Big Game section of Chapter IV of the FEIS (under Timber Harvest and Roads sections).

COMMENT NO. 42: The FEIS should discuss the relationship between levels of Animal Unit Months (AUM's) and wildlife numbers and distribution.

FOREST RESPONSE:

The production and allocation of available forage has not been identified as a limiting factor for big game and other wildlife populations As shown in Figure IV-D and discussed in Chapter IV of the FEIS, the availability of forage significantly exceeds the demand in all management alternatives. Preliminary analyses conducted in the Analysis of the Management Situation and summarized in Forest Plan Chapter 2, show that a problem occurs only at the very highest levels of livestock and wildlife use. The relationship between various levels of wildlife numbers and domestic livestock is also discussed in Chapter IV.

COMMENT NO. 43: Concerning the 40/60 percent split of forage between livestock and big game, 40/60 percent of what?

FOREST RESPONSE:

The 40/60 percentages displayed in both the draft and final EIS and Forest Plans refer to the available and palatable forage allocations for big game species and domestic livestock Sixty percent of the available forage is reserved for wildlife with the remaining 40 percent allocated to domestic livestock. Available forage is not the entire plant, but only that portion available after plant needs are met. A discussion of the allocation of available forage between big game and domestic livestock is included in Chapter IV of the FEIS.

ELK/RIPARIAN AREA RELATIONSHIPS

COMMENT NO. 44: In management strategy C5, page D-62, the value of riparian zones to big game is primarily that they provide quality forage, especially late in the growing season. Many sites in mid- to late successional stages, which qualify as thermal cover, produce little available forage. Maintaining a 25-50 percent canopy, rather than 70 percent, in such moist areas adjacent to riparian zones is optimal for elk in this special habitat because otherwise plant phenology would be delayed, curtailing the increase in vegetation production that would allow for greater forage intake prior to breeding season.

FOREST RESPONSE:

Riparian areas provide valuable habitat not only for fish but also many species of wildlife, including elk. As displayed in the tables and charts in Appendices 26 and 28 of "Wildlife Habitat in Managed Forests-the Blue Mountains of Oregon and Washington" (Thomas and others 1979), the riparian areas (landtypes 21 and 22) are extremely valuable as elk habitat, and the removal of any cover reduces the potential use of the areas by elk Forage is not the limiting factor associated with the riparian habitats. Therefore, the Riparian/Wildlife Management Strategy (C5) has been designed and used to maintain

cover, protect the water quality, and provide streamside shade, through the emphasis of uneven-aged silvicultural management and other prescriptions

COMMENT NO. 45· Because of the critical importance of riparian and wet meadow habitats to wildlife, as mentioned in DEIS, page IV-55, paragraph 2, these habitats should be designated special management areas. In order to ensure adequate protection of these habitats, minimum management requirements (MMR's) should be developed and included in the final documents

FOREST RESPONSE:

The riparian and wet meadow habitats are recognized as extremely important and valuable for a wide variety of wildlife species, and are quite limited in terms of acres available on the Forest For these reasons, a level of protection has been provided in the Forest Plan and FEIS in the form of Forest-wide Standards and Guidelines and in a riparian management area (C5) described in Appendix D. A management requirement for stream shade production in riparian areas was established and used in the DEIS and FEIS Standards for C5 exceed the management requirements

COMMENT NO. 46. Why are goals for elk habitat in riparian zones emphasized while habitat for other mammals is not?

FOREST RESPONSE:

As described in the Wildlife section of Chapter III of the FEIS, Rocky Mountain elk were selected as the management indicator species (MIS) for the general forest habitat A planning assumption was that if the habitat needs of elk were adequately maintained (habitat components such as cover, forage, seeps, bogs, etc), habitats for other big game species and many other mammals would also be adequately protected. The primary management objectives as described for the riparian Management Area C5 in Appendix D, are for water quality and wildlife habitats, (which provide high levels of dead and down tree habitat for primary and secondary cavity users), improved water quality, and other habitat components essential for wildlife species

COMMENT NO. 47. Why would a crown closure of 70 percent be the goal for thermal cover, when 80 percent shade is the goal for the channel?

FOREST RESPONSE:

By definition, satisfactory (thermal) cover must have a crown closure of 70 percent, as described in the Forest-wide Standards and Guidelines in Appendix D of the FEIS (and Thomas and others 1979). Because of the important nature of the riparian habitats, the management emphasis in the Forest-wide Standards and Guidelines and the riparian management area (C5) is primarily to provide protection of essential habitats for both wildlife and fish, and to improve water quality The 70 percent crown closure applies to the entire riparian area and provides important cover for a variety of wildlife species. The 80 percent shading requirement is needed to provide stream surface shade, important for anadromous and resident fish populations, and to maintain both water quality and temperatures. Both requirements are necessary, but they reflect different objectives.

COMMENT NO. 48: Paragraph 2 on page III-34 should be expanded to include a discussion as to what extent fish and wildlife habitat needs conflict with each other

FOREST RESPONSE:

Conflicts between fish and wildlife species center more in the habitat improvement projects that may be needed or proposed in the Forest Plan, such as removing large timber snags to be used for instream structures or as "large woody debris" for fish habitat The same snags may be used and/or needed by both primary and secondary cavity users More often than not, management objectives for fish and wildlife species are complementary rather than conflicting, such as in management of riparian areas; conflicts are generally exceptions rather than the rule.

HUNTING

COMMENT NO. 49. Table 2-3 on draft Plan page 2-5 shows that the demand for elk hunting will eventually increase to 25 percent above supply. Since elk hunting is one of the highest noncommodity uses of the Forest, it would seem that reducing the elk population 5 percent below the state population management objective would drastically impact the economic benefits of elk hunting on the region.

FOREST RESPONSE.

The estimated reduction of 5 percent is expressed in terms of "potential" elk populations as a result of habitat conditions projected in the Forest Plan. The estimate may or may not be reflected in "actual" elk numbers. The estimated changes in potential elk numbers for each of the management alternatives have been analyzed and displayed in Table II-6A. These changes have also been evaluated in terms of wildlife/fish user days (WFUD's) and economic benefits are shown in Tables II-6, II-34, and discussed in Appendix B of the FEIS. The estimates of future elk hunter demands are also gross projections that may or may not reflect the actual situation Although the reduction in "potential" elk populations is relatively small, some future hunter demand may not be met while meeting other objectives, or else the hunting experience will still be provided but hunters may have less success The estimated projections for both hunter demand and estimated WFUD's have been analyzed and are presented in Chapter II In the FEIS, five alternatives including the preferred meet or exceed long-term estimated hunter demand.

COMMENT NO 50: The Forest should review its wildlife management constraints and incorporate methods of "hunter management" to meet the ODFW management objectives for big game.

FOREST RESPONSE·

Under the Forest Plan, the Forest will be managed to provide an array of recreational experiences varying from roaded to primitive opportunities. These recreational environmental settings indirectly correspond to a variety of recreational hunting experiences Within each management area, emphasis on recreation access management sets the framework for future hunting opportunities. Opportunities vary from roaded to closed roads to unroaded experiences. Motorized access and travel management plans prepared as the Forest Plan is implemented will also help to clarify recreational and hunter opportunities. The Forest has selected what is considered to be a "balanced" resource program among big game, recreation, and other resource requirements. Actual management of the number of hunters and the timing of the hunting seasons lies with the respective state wildlife agencies.

COMMENT NO. 51: The Forest Service claims that clearcutting will increase elk numbers and therefore hunting in the Texas Butte area. These claims are contradicted by information from Forest Service surveys and state wildlife biologists. Most of the evidence indicates that big game herds and hunting will decline.

FOREST RESPONSE:

As indicated in a number of research publications and other sources of information included in the References section of the FEIS, elk summer range habitat values can be increased or enhanced by regeneration timber harvesting in large, continuous timber blocks of dense cover, as in the Texas Butte area If regeneration harvesting is permitted in this area, with controls over harvest unit size and distribution to maintain adequate amounts of both satisfactory and marginal cover, elk habitat values (Habitat Effectiveness Indices) can be significantly improved. In an area of continuous forested canopy, creating openings, through a well planned timber sale program, can provide more forage areas and an improved distribution of cover These assumptions are based on the concepts in "Wildlife Habitats in Managed Forests" (Thomas and others 1979). However, no assurance exists that "good" big game habitat conditions will result in good hunting conditions Desirable habitat conditions for both deer and elk are generally quite open, and animals will be much more visible than in an unharvested habitat condition In the final analysis, the Forest must manage for both desirable wildlife habitat conditions and for public hunting opportunities. The Forest and both Oregon and Washington state wildlife agencies must work together to provide a "balanced" mix of hunting opportunities and the need to maintain habitat conditions As described in the Forest Plan, the mix of management strategies and road management objectives is provided in order to meet both objectives.

COMMENT NO. 52: We ask that the roaded modified end of the Recreational Opportunity Spectrum (ROS) not be used as the major solution to developing more access for big game hunting in or near any riparian areas. We feel that a greater emphasis should be placed on the riparian areas is such alternatives are implemented.

FOREST RESPONSE:

The Roaded Modified ROS normally results from commodity and other resource activities and does not provide direction to construct roads. Roads are developed for reasons other than access for big game hunting; i.e., timber management, administrative use, etc. Hunting access is just one of the many considerations used by land managers to decide which existing roads should be open or closed to motorized use. The proposed Plan gives high emphasis to riparian areas, but they may not be as visible in the document as some resources are. The C5 and C6 management strategies emphasize riparian area protection, but do not show up on the DEIS alternative maps because of the map scale. Management Area C5, Riparian Areas, was mapped for the Final Plan maps Management Area C6 is not used in the final EIS. Table II-4 shows the management ares acreage for each alternative. Refer to the alternative descriptions (FEIS, Chapter II) and the Forest-wide Standards and Guidelines (FEIS, Appendix D) for clarification of riparian area management. New roads will only be constructed in riparian areas "when consistent with riparian management goals."

MONITORING

COMMENT NO 53: A comprehensive wildlife monitoring program should be developed and adhered to. Emphasize monitoring rather than theoretical constraints as the most appropriate way to deal with the scientific uncertainty surrounding the elk management issue.

FOREST RESPONSE:

A comprehensive monitoring plan has been developed and the summary is included as a part of Chapter 5 of the Forest Plan. It has been carefully reviewed and revised to update the techniques, frequencies, costs, and species to be monitored Monitoring efforts will develop long-term trends in wildlife populations and habitat conditions in order to test the assumptions presented in the Plan. As the assumptions are tested over time, some of the management directions and/or constraints may be altered as needed. Ongoing elk research at the Pacific Northwest Forest and Range Experiment Station in La Grande, and particularly at the Starkey facility, will provide many answers to presently unresolved questions and will undoubtedly affect our future planning efforts.

COMMENT NO. 54: The final Plan should include an effective monitoring program to assess the impact of timber and range management on big game populations. Timber harvest activities on the Forest will not substantially reduce cover conditions. Abundant opportunity will exist to protect additional acreage if monitoring establishes a clear need to do so.

FOREST RESPONSE:

Both the draft and final EIS and Forest Plan have included a comprehensive monitoring plan to assess the impacts of proposed timber harvest, range and other management activities on big game and other wildlife populations and their habitats Based on a number of the Benchmark FORPLAN runs summarized in Appendix B of the EIS, unconstrained timber harvest activities removed substantial amounts of wildlife cover. The analysis clearly displayed the lost of all satisfactory cover on winter ranges by the end of the second decade.

ELK MOVEMENT ONTO PRIVATE LANDS

COMMENT NO. 55· The Oregon Department of Fish and Wildlife, in their agency commentary on the Plan, stated that "management activities on the Forest have been and are displacing elk onto private lands." This statement is a repetition of the obvious situation that exists during hard winters when there are no big game animals present on much of the 277,677 acres of so-called winter range indicated on page III-33 of the DEIS. This familiar-situation statement is a symptom of several probable factors (1) That ODFW management

objectives for the elk population are unrealistically high, (2) that extensive areas regarded by the Forest Service and ODFW as winter range are unsuitable for this purpose during hard winters; and (3) that winter feeding stations tend to condition big game to frequent these locations even when natural forage availability is sufficient to support the overwintering population.

FOREST RESPONSE:

The Forest, in cooperation with both the Oregon Department of Fish and Wildlife and the Washington Department of Wildlife, delineated big game winter range boundaries based on "average" winter conditions The Forest also recognizes that, during severe winters, wildlife populations will temporarily vacate defined winter ranges. Such events are unpredictable and beyond the scope of this planning document. However, the Forest has recognized the importance of the winter ranges and has provided for the protection and/or maintenance of habitat conditions on these areas through the development of Forest-wide Standards and Guidelines and management strategies (C3, C3A, C8) in the Forest Plan and FEIS.

Both Oregon and Washington wildlife agencies have herd management objectives and policies regarding big game winter feeding programs which rest solely with these authorities. However, within the Forest Plan the Forest is committed to assist the state wildlife agencies in meeting their big game (and other wildlife) population objectives. The population objectives were established in 1980 through numerous public meetings and both oral and written public input The Forest supported the states in their efforts to set realistic population objectives and analyzed existing habitat conditions and available forage to insure that adequate amounts of habitat were available to maintain state population objectives.

COMMENT NO. 56: The Forest can go further in examining techniques for increasing the compatibility of elk management and other major forest uses. The existing and potential conflicts caused by elk wandering onto private land is of special concern. The Forest should reexamine its roading and forage enhancement policies and, in addition, should consider an imaginative distribution of cover across the Forest

FOREST RESPONSE:

As discussed in Chapters I (Issues) and IV of the FEIS, all aspects of big game management, including the displacement of big game species to private lands and any damage that may result, are major concerns for the Forest. Forage and cover management, water developments, prescribed burning of winter ranges, and road closures will continue to be used to maintain or enhance elk and deer habitat values on the Forest. The attraction of private lands for big game species resulting from good forage, available water, low levels of harassment, available cover, and gentle topography will continue to be present. The Forest management efforts should help keep big game on the Forest. Continued coordination efforts will be required between private landowners, state wildlife agencies, and the Forest in order to resolve the problem.

The Forest is, and will continue, taking advantage of new and/or different techniques to increase the compatibility of elk management with other Forest uses. For example, the research work being done with the big game enclosure at the Starkey Experimental Forest near La Grande will undoubtedly discover new techniques for big game management over the next 10 years, and they will be incorporated into the Forest Plan.

COMMENT NO 57: The final EIS should evaluate management activities that force elk off the Forest and onto private lands.

FOREST RESPONSE.

The problem of wildlife depredation of adjacent private lands was a public issue recognized in the early stages of the planning process. Most of the problems involving big game damage to adjacent private lands occur during the winter and early spring Therefore, management activities during the winter and spring months are the focus of Forest management and evaluations. Additional items considered included:

1) *Management direction and Forest-wide Standards and Guidelines included in Appendix D of the FEIS for the management and emphasis of wildlife habitats (such as C3, C3A, C4, C5, and C8)*

include a number of restrictions involving road closures that reduce much of the harassment of wintering big game.

2) *Management guidelines in the above management areas include specifications to maintain high levels of cover and habitat effectiveness, as well as other important habitat components.*

3) *Habitat improvement projects, such as prescribed burning, browse and forage plantings, and water developments, will provide better habitat conditions to help maintain big game species on Forest lands.*

4) *Weather conditions, in addition to a variety of Forest management activities, play a major role in forcing elk and deer to lower elevations onto private lands.*

WINTER RANGE

IMPORTANCE

COMMENT NO. 58: The importance of winter range for big game is recognized in the DEIS, yet no acknowledgement of that fact is reflected in the Plan

FOREST RESPONSE:

A recognition of the importance and value of big game winter ranges is reflected in the Wildlife section of Chapters 2, 3, and 4 of the Forest Plan The chapters summarize the resources and the management areas and standards and guidelines that apply Forest-wide. The final Forest Plan however, has been reworded to reflect more clearly the value and importance of these habitat areas in the "Resource Summaries" section of Chapter 4

COMMENT NO. 59: Most of the area's winter range is located on privately owned lands adjoining the National Forest and many of the Forest elk eventually end up wintering on these lands once the snow gets deep Increased herd size would impose significant economic costs on the area's ranching industry. As a result, many of the area's ranchers would like to see the Forest elk population reduced rather than increased. Population target figures should not be derived without considering the year-round habitat capability of all the lands in the Forest's zone of influence.

FOREST RESPONSE:

During the early 1980s, the Oregon Department of Fish and Wildlife established state population management objectives (SMO's) for elk and other big game species in the state with considerable input from a series of public meetings The Washington Department of Wildlife has subsequently developed similar population objectives for their herds. The Forest carefully analyzed forage capacities and other management activities to determine if the proposed SMO levels were realistic The analyses indicate that proposed population objectives were "in line" with available resources, and the Forest generally supported the departments' recommendations

*The Forest does provide only about 30 percent of the total big game winter range area In years of heavy snowfall, the adjacent private lands can, and often are, heavily impacted For these reasons, the Forest has developed standards and guidelines, a series of wildlife management strategies and winter range habitat improvements featuring prescribed burning to provide basic and/or essential habitat levels, to maintain big game populations on Forest lands as long as possible, and to ease the impact to adjacent private lands. One of the reasons for the selection of the preferred alternative (Alternative **F** in the DEIS) was that the Habitat Effectiveness Index (and potential elk population levels) was basically maintained within 10 percent of the SMO's The preferred alternative (**F/M**) in the FEIS has predicted potential populations generally close to the SMO through five decades As shown in Figures IV-J1 and J2 in Chapter IV of the FEIS, after a slight increase in the potential population in the first decade, potential populations are anticipated to decline slightly below the SMO in the second decade and to increase above the SMO by decade 5*

COMMENT NO. 60: The Washington Department of Wildlife has proposed a specific management strategy for winter range that will maximize its value for elk That strategy separates identified elk winter range into "critical" and "intermediate" and should be incorporated into the final Plan. Continued timber management using the improved winter range guidelines is appropriate on intermediate winter range, but the critical winter range would be managed for no harvest.

FOREST RESPONSE.

The management area proposed by the Washington Department of Wildlife to maximize winter range values for elk has been incorporated in the FEIS and Forest Plan The "Sensitive Big Game Winter Range" strategy (C3A) has been included and applied to appropriate portions of identified winter ranges. No "scheduled" timber harvest activities are permitted and all other proposed management activities must maintain or enhance habitat conditions for big game and other wildlife species

HABITAT EFFECTIVENESS INDEX (HEI)

COMMENT NO. 61. The final Plan should provide the rationale supporting the decision to manage winter range at a minimum level of thermal cover, as stated in the last paragraph on page B-59.

FOREST RESPONSE:

As directed in the Forest-wide Standards and Guidelines in Appendix D of the DEIS, "a minimum of 10 percent of each winter range will be maintained as satisfactory (thermal) cover." The 10 percent figure is not necessarily a minimum, but rather a discretionary constraint figure below which the Forest did not wish to fall. The requirement was used to accomplish two major objectives in responding to the issues, including: (1) Maintaining cover and effective habitat to meet state management objectives for elk and deer, and (2) retaining animals on the Forest to minimize potential private land damage.

The early "benchmark" FORPLAN runs indicated that, without timber harvest constraints, satisfactory (thermal) cover on winter ranges was quickly eliminated during the first two decades in the model. Therefore, in the development of the winter range management area (C3), certain minimum standards for satisfactory cover were maintained These cover constraints resulted in reduced harvest yields but were needed to meet objectives.

The intent of the FEIS is to include the words "provide no less than 10 percent of each of the 21 winter ranges as satisfactory cover." As outlined in the winter range management area (C3 and others), additional cover of at least 20 percent will also be provided and is expressed in terms of a 70 percent Habitat Effectiveness Index The Forest has estimated that state management objectives for elk and deer can be maintained (within 10 percent) with the specified levels of winter range habitat and cover.

COMMENT NO. 62: The first paragraph on page 4-43 states "Where available, maintain a minimum of 10 percent of each identified winter range as thermal cover." Where cover is not available because of past logging, will the Forest restore thermal cover that is lost or is the present condition to be set as the "ideal" condition to be maintained from this time forward?

FOREST RESPONSE:

On winter range areas where present levels of existing, satisfactory cover have been reduced below the 10 percent level, future timber harvest activities will be constrained until cover conditions are provided and/or exceed the minimum standard. In addition, any future harvest activities would then maintain the satisfactory cover conditions at or above the 10 percent level as stated in the standard and guidelines shown in Appendix D of the FEIS. One of the objectives of the Forest is to capture opportunities to restore and maintain satisfactory cover conditions

COMMENT NO 63: Until the Forest can demonstrate that there will not be a significant falldown in the "Habitat Effectiveness" value on winter range due to thermal cover being a limiting factor, it is recommended that the 50 percent level ODFW suggested is in accordance with recent research findings. This subject should be addressed on a minimum of a tri-forest (Umatilla, Malheur, and Wallowa-Whitman) basis.

FOREST RESPONSE:

A Forest management concern for the retention of adequate amounts of satisfactory (thermal) cover on winter ranges prompted the development of the wildlife-emphasis management areas (including C3, C3A, C5, and C8) that apply to each of the 21 identified winter ranges. On the Forest, the inherent site potential of the majority of the winter ranges is generally quite low and incapable of providing 50 percent of the entire winter area as satisfactory cover The management area direction of maintaining "no less than 10 percent of each of the entire winter ranges as satisfactory cover" reflects a more realistic objective based on site capability. An additional 20 to 30 percent of the winter ranges will be maintained as marginal cover, which is reflected in the management objective of an index of 70 percent of potential habitat effectiveness.

Coordination between the three forests has been an ongoing effort throughout the planning process and the development of management directions for identified winter ranges is a result of that effort and coordination.

COMMENT NO. 64: If an area is naturally very productive as winter range, then why is there a need to manage in order to achieve a 70 percent effectiveness?

FOREST RESPONSE·

Winter ranges on the Forest are quite variable in productivity; some are relatively high and others low. As stated in the winter range management areas in Chapter 4 of the Forest Plan, "elk habitat will be managed to achieve a minimum of 70 percent of the potential habitat effectiveness including discounts for open roads...."

The 70 percent of potential level is relatively high and set to achieve management objectives On some winter ranges, requirements could not be met if the HEI criteria were higher The overall objective is to maintain or improve winter range habitat conditions for big game. If a designated winter range area is presently at, or below, 70 percent of its potential habitat effectiveness as a result of "open" roads or past management activities, timber harvest practices will not take place or may be delayed. However, if the habitat effectiveness is higher than 70 percent, the opportunity for timber harvest activities exists, if such activities are consistent with the primary habitat objective The Habitat Effectiveness Index is only a method of estimating habitat conditions and will vary over time as conditions change At times the HEI could well be higher than 70 percent. The wording in the final Plan has been changed to "maintain no less than 70 percent...."

TIMBER HARVEST

COMMENT NO. 65: The Forest should examine and explain the factors behind the tradeoffs between timber production and elk production expressed in your preferred alternative According to the DEIS, the winter range management associated with the different alternatives varies tremendously in its impact on timber harvest (from 5.1 to 42.4 million board feet per year), with the highest impact associated with the preferred alternative. The link between the acres in different harvest-restricted categories and the effects is missing. Surely a 65,000 acre increase in these categories will not cause a 37 3 million board foot annual reduction in timber harvest as suggested in the table on DEIS page IV-30.

FOREST RESPONSE:

Unfortunately, there were errors in the figures presented in Table IV-9. The effects of winter range were inadvertently combined with the effects of the grass-tree mosaic (GTM) and, in effect, doubled the impact The maximum reduction in timber yields for Alternative F winter ranges should be about 20 4 MMBF, rather than the 42.4 MMBF shown in the table in the DEIS. The figures were corrected. For Alternative F/M, the total for the winter range tradeoff is still estimated at about 20 MMBF. The tradeoffs are found in Appendix B of the FEIS (Table B-VIII-5) Other tradeoff estimates are in the process records.

COMMENT NO. 66 Timber management prescriptions in designated or frequently used deer and elk winter range should preclude any harvesting of mature and old growth timber stands and should be designated to optimize the number of acres in such age classes that will be provided in the future.

FOREST RESPONSE:

In the Forest Plan, old growth and mature tree stands will occur in winter ranges under two different circumstances. One is in the management areas encompassing winter range in which there are no "scheduled" timber harvest activities Included in this category are Management Areas A1, A2, A7, A8, C3A, C8, and F2. The other case is where identified old growth/mature tree units, managed under C1 direction, are included in winter ranges with scheduled timber harvest activities. However, winter ranges do not contain much identified old growth other than that managed under C1. While the application of the management areas in the selected alternative do not "optimize" old growth and mature tree habitat, they provide a good mix of successional stages and habitat conditions in the winter ranges throughout the Forest

COMMENT NO. 67. One of the most surprising areas for which even-aged management is recommended is in big game winter range. The strategies and guidelines in the Plan recommend managing for multi-storied stands in this land allocation.

FOREST RESPONSE.

The winter range strategy (C3) in the DEIS included the option, and not necessarily the "recommendation," for even-aged management where compatible with the primary objective of maintaining or improving habitat conditions for elk, the management indicator species As described in Appendix D of the FEIS, a range of silvicultural options is available, including individual or group tree selection. In the FEIS and Plan, the winter range management area (C3) has been revised to clarify and emphasize the use of uneven-aged silvicultural prescriptions

GRASS-TREE MOSAIC (GTM)

COMMENT NO. 68· There is no justification discernible anywhere in the planning documents for the C8 Grass-Tree Mosaic (GTM) Management Area, unless the designation is no more than a surrogate for retaining 95,500 acres or 69 percent of a C8 area unroaded in a category identical to A1 If the primary objective of managing big game habitat components, cover, and roads, is to be the actual purpose, we recommend all C8 areas in the preferred alternative be redesignated big game range as a more appropriate management regime similar to C3 winter range areas There is no reason for excluding managed accessed roads and timber harvesting from C8 areas, as recommended in the multiple-use alternative in Alternative **F**.

FOREST RESPONSE:

As outlined in Appendix D of the FEIS, the Grass-Tree Mosaic (GTM) Management Area (C8) does not necessary exclude roads or the unscheduled harvesting of some timber, as long as such activities clearly improve habitat conditions for wildlife. The areas mapped as C8, however, are generally very steep with shallow, unproductive soils, and scattered, narrow timber stringers. The primary management considerations for these identified narrow, timber stringers are (1) visual management; (2) soil erosion that may result with management activities (including road building) on steep, shallow soils; (3) improved water quality; (4) wildlife management; and (5) maintained vegetative diversity. The majority of the areas are identified as important big game winter ranges and the primary management consideration outlined in that management area is for big game habitat Given the characteristics of the area and importance for big game and other resource values, the Forest created the management strategy and applied it as shown in the final Plan. The primary difference between C8 and the winter range management area (C3) is the absence of a "scheduled" timber harvest. Both areas are designed to achieve no less than a 70 percent habitat effectiveness index for elk

COMMENT NO. 69: Even if one accepts the unverified elk winter range/thermal cover premise, there are timber management techniques that can maximize forage quantity and quality, and favorably alter its time of availability on critical winter and spring ranges. Such techniques as narrow strip and patch cutting can be

utilized in the C8 unit without reducing effective cover. The added benefit would be earlier and later-season forage availability within the cutover areas; green forage would then be available when other grasses on the winter range are cured out and nutritionally most deficient. Existing techniques such as these can negate the basis for an elk winter range/timber harvest conflict. Forest Service managers should not only be permitted, but expected to employ such techniques.

FOREST RESPONSE:

The Grass-Tree Mosaic (GTM) Management Area (C8), as described in Appendix D and in Chapter III of the FEIS, has been proposed in response to public comments and in order to provide a measure of protection to important and identified big game winter ranges GTM areas are generally steep, extensive grasslands on shallow soils interspersed with small patches or narrow "stringers" of timber. Typical GTM areas may be seen in the photos for the Horseshoe Ridge, Hellhole (north Meacham Creek), and Potamus roadless areas included in Appendix C of the FEIS.

The areas are generally limited in the amount, quality, and distribution of cover available to wintering big game animals. However, where adequate amounts of cover are available, or where habitat conditions can be improved, some limited amounts of timber may be harvested on an unscheduled basis. Any timber harvesting would employ narrow strip or small patch harvesting as suggested, or uneven-aged silvicultural prescriptions.

On the GTM areas, forage is not generally a problem However, the Forest expects to enhance forage to meet winter range objectives through a prescribed burning program.

COMMENT NO. 70: Why does the Forest in its preferred alternative place the Hellhole roadless area into a manipulative grass-tree mosaic prescription?

FOREST RESPONSE:

The Hellhole roadless area (as seen in the photos in Appendix C of the FEIS) is steep and has many scattered "stringers" and patches of timber. The area is noted as important for wildlife, particularly big game. Therefore, the Forest applied a C8 strategy to the area in several alternatives and in the final Plan. The C8 Management Area specifies: A level of habitat effectiveness that must be maintained; a minimum level of cover; no scheduled timber harvest; some possible road development, and areas mapped as roadless will remain roadless, as described in Appendix D While some management activities, consistent with the described goals and objectives may occur within the GTM, it is not a "manipulative" management prescription.

COMMENT NO. 71: The boundary of the C8 area in the North Fork Asotin Creek does not follow the identified GTM boundary; instead it follows the roadless area boundary.

FOREST RESPONSE.

The Grass-Tree Mosaic Management Area boundary (C8) has been revised and redrawn in the FEIS and Forest Plan maps to conform to the identified GTM boundaries.

CONDITION

COMMENT NO. 72: If 29 percent of winter ranges are "poor" or "very poor," what percentages are "fair," "good," and "excellent?"

FOREST RESPONSE·

Chapter III of the FEIS describes the winter range "affected environment" in the Wildlife section Of the 21 winter ranges on the Forest, 71 percent of the surveyed "nontimbered" portions are in fair to good condition, while 29 percent remain in poor to very poor condition The fair and good condition acres are as follows· Fair, 66 percent; and good, 5 percent (figures taken from Umatilla National Forest Wildlife

Program 5-Year Action Plan). None of the winter ranges is in "excellent" condition A table showing conditions of all winter ranges on the Forest is included in the FEIS.

COMMENT NO. 73: According to page III-33 of the DEIS, 29 percent of GTM lands are presently in poor to very poor condition The preferred alternative requires only that these lands be managed so as to maintain a stable or improving condition. Public range lands, especially those which are supposed to be primarily for wildlife, such as GTM lands, should be in nothing less than good condition. For lands in poor to very poor condition, "stable" is surely unacceptable.

FOREST RESPONSE:

The extensive survey conducted in 1981-82 of the non-timbered portions of designated big game winter ranges indicated about 29 percent of the 138,863 acres surveyed, (25 percent) were in poor and (4 percent) in very poor condition. The primary reason for the poor and very poor range condition was excessive and poor grazing practices more than 50 years ago Such practices have long been eliminated or corrected. In most cases all domestic livestock grazing was removed from the affected portions of the Forest Unfortunately, most of the areas are on steep, shallow, and unproductive soils and changes in vegetative conditions are slow The intent of Forest management on these lands is for an "improving" condition, while maintaining a "stable" or "improving" condition on the fair or better condition ranges The appropriate sections of Chapters III and IV of the FEIS and Forest Plan have been revised to more clearly display this intent The revised Goal Statement for the Range Forest-wide Standards and Guidelines in Appendix D of the FEIS addresses your concerns

COMMENT NO. 74: The first paragraph on DEIS page III-29 should identify which winter ranges have conflicts in forage allocations between big game and livestock.

FOREST RESPONSE:

The available forage on each identified winter range was analyzed during a review of the state management objectives for big game in 1981. Existing information indicated a possible problem in the amount of forage available to accommodate both existing numbers of domestic livestock and proposed big game population levels on only 2 of 21 winter ranges The apparent problems were later resolved to the benefit of the elk by having the state management objective take precedence over livestock. Further analysis of better and more recent available forage information indicates the conflicts no longer exist The text in Chapter III, Wildlife, has been revised to reflect the current situation.

COMMENT NO. 75: On DEIS page III-33 under Winter Ranges, each winter range should be clearly defined by size, location, range condition, "Habitat Effectiveness" value, and the estimated herd size. The parameters for the 1981-82 winter range survey should also be specifically defined. It is apparent that data for thermal cover and other habitat variables for each of the 21 winter ranges should be made available for analysis to the Tribes, ODFW, and WDW to enable a reasonable response from them.

FOREST RESPONSE:

The Big Game Winter Range section of Chapter III has been revised to include a table showing the location, size, condition, and state management objectives for elk on each identified winter range. The extensive 1982 range survey of each winter range utilized standard range survey techniques. A more complete analysis of the survey is available for review In the FEIS and FORPLAN model, each of the winter ranges has been identified separately; and cover, roads, and other habitat parameters have been tracked through time. This information is also available for review by interested parties.

ROADS

EFFECTS OF ROADS

COMMENT NO. 76: The DEIS states that there are 5,000 miles of road systems on the Forest. There is no discussion of the cumulative impact of the existing transportation system on wildlife.

FOREST RESPONSE:

The present conditions relative to roads is described in FEIS Chapter III The direct and cumulative impacts of roads and trails are analyzed and discussed in detail in the Wildlife section of Chapter IV of the FEIS. Vehicular traffic on existing roads does have an impact on wildlife species, and the impacts are an integral part of the model used to describe habitat effectiveness for elk.

COMMENT NO. 77: Roads, and the people and traffic associated with them, have a more significant influence on elk security than most other factors combined (J. Lyon and others 1985, "Coordinating Elk and Timber Management-Final Report of the Montana Elk Logging Cooperative Elk Logging Study")

FOREST RESPONSE:

Vehicular traffic associated with the "open" roads on the Forest have a clear and demonstrable adverse impact on the use of available habitat by elk and other big game species. For this reason, roads are an integral part of the model used in developing an assessment of habitat capability, and the effects of timber harvest and other management activities on the Forest (as described in Chapter IV of the FEIS)

COMMENT NO. 78: Roads represent neither the problem nor the solution to the elk winter range issue within primarily roadless Grass-Tree Mosaic area.

FOREST RESPONSE:

The Grass-Tree Mosaic Management Area (C8), as described in Appendix D of the FEIS, has been proposed and applied in the Forest planning process to portions of identified big game winter ranges (and a portion of some summer ranges) that are primarily steep grasslands with shallow soils interspersed with patches or narrow stringers of forested vegetation. Very few roads presently exist in many of the identified GTM areas. The maintenance of adequate amounts of cover on designated big game winter ranges provides protection for wintering animals from harassment by use of motor vehicles. The roads themselves are not the primary problem.

COMMENT NO. 79. Why should closed roads be opened for any off-highway vehicles (OHV's) with less than a 40" track width? The harassment factor is not improved by this proposal

FOREST RESPONSE:

The concept included in our existing unit management plans, of "closed roads except for OHV's with less than a 40-inch track width," has been eliminated in the current Forest planning process. All roads designated as "closed" that meet the definition included in the Glossary of the FEIS and district access management plans will specify that no motor vehicles (including OHV's less than 40 inches in width) will be allowed on closed roads.

COMMENT NO. 80: The language in the final Plan should include the following for Management Area C3 on page D-58: Snowmobiling will be permitted when the snow depth exceeds 18 inches This will protect the ground and protect the elk since they will generally move out of areas with that much snow. The Plan should insure that snowmobile corridors will be permitted through winter ranges where necessary. Winter ranges are very large areas and we feel the Plan gives too much control to ODFW. We are concerned it would be too easy to close the areas to snowmobiling.

FOREST RESPONSE:

Big game winter range and the use of snowmobiles are seldom compatible. Often forage and cover are the primary limiting habitat factors on designated big game winter ranges and, during this period of time, wildlife are often under "stress" to find adequate forage to maintain body weight and temperatures. Accordingly, the Forest does not want to routinely or indiscriminately allow snowmobile operation on designated big game winter ranges If corridors were opened through the winter ranges, it would be easy for some people to stray into other portions of the winter range. Enforcement would likely be very difficult because neither the Forest nor the state game departments have the resources to patrol such corridors In addition, it could be very difficult to notify people when areas are open/closed due to the high degree of variability in the timing of snowfall or snowmelt. Therefore, the only viable management alternative for big game winter ranges is to prohibit all motor vehicles through the winter use period (from December 1 through March 31) However, the Plan does provide the opportunity for the Forest manager to authorize requests for operations of snowmobiles in a prescribed area if that decision is consistent with wildlife objectives as described in the winter range management area (C3) in Appendix D of the FEIS.

ROAD CLOSURES

COMMENT NO. 81: Closed roads are often preferred by elk as travelways (Leege 1984).

FOREST RESPONSE:

While elk and other big game animals may utilize existing roads as travelways, most of the available research and literature clearly demonstrate that vehicular traffic associated with "open" roads has a detrimental impact on the animals and their habitat. Some of the research has been listed in the References section of the FEIS. Closed roads, on the other hand, are often preferred as travelways.

COMMENT NO. 82: Page IV-67, last paragraph, says roads remaining open for off-highway vehicles (OHV's) are not effectively closed to motor vehicles. Disturbance from OHV's does not compare with that from nonmotorized use, and impacts should be assessed separately.

FOREST RESPONSE:

As the Forest Plan is implemented, roads that are closed (or that are planned to be closed), will be closed to all vehicular traffic. A definition of "closed" roads has been included in the Glossary of the Forest Plan. The assumption is made that all vehicular traffic, whether by cars, trucks, or OHV's, have the same harassment factor in the habitat model utilized to develop reported outputs. A careful review of available literature demonstrates the adverse impacts of motorized access on elk and other wildlife habitats; some of the literature is included in the References section of the FEIS. Nonmotorized use of existing roads and trails is much different than motorized use of the same transportation system; it is not considered significant and is not used in the elk habitat model.

COMMENT NO. 83: Scientific literature clearly indicates that seasonal road closures are an effective tool for providing wildlife habitat security and opportunities for quality hunting experiences. Losses in habitat effectiveness for elk can be: (1) At least partially mitigated by imposing strict design and location standards during road construction, and (2) greatly reduced through appropriate traffic control and road closures.

FOREST RESPONSE:

Careful and well planned road construction, design, and location can partially mitigate losses in habitat effectiveness resulting from the construction of roads. The Forest-wide Standards and Guidelines and the wording in many of the management areas in Appendix D of the FEIS address road closures and road location. Mitigation of road impacts on big game habitat and other wildlife species' effectiveness is also addressed in Chapter IV of the FEIS.

In the same chapter, some broad objectives for road closures are outlined. An integral part of the elk habitat model are the miles of "open" roads that need to be considered. Access management plans are

scheduled to be written for each ranger district as part of the implementation of the Forest Plan. The access management plans will be based on public input and guided by the Forest Plan direction. Seasonal closures are expected to be addressed and use clarified in the access management plans. However, seasonal closures are only effective if the animals are in the area

COMMENT NO. 84: In areas with low forage production, timber harvest is beneficial to big game, providing the roads built for timber harvest are closed following harvest to provide the security needed by big game Currently, the level of security is not present and the forage created by timber harvest is under utilized by big game.

FOREST RESPONSE.

As a general rule, forage is not a problem on the Forest, including on winter ranges On the other hand, one of the primary limiting factors is the availability of cover during periods of harassment. Properly planned and designed timber sale activities can therefore be beneficial to big game by providing not only additional forage areas, but also more "edge" or usable habitat Intrinsic to these assumptions, however, is the maintenance of adequate cover and security areas and an effective road closure program. The Forest Plan proposes the closure of nearly half of the existing roads and most of the new roads on the Forest; it also suggests the maintenance of adequate cover, in order to achieve projected habitat conditions for big game and other wildlife species. Forage will be more effectively utilized under the planned habitat conditions.

COMMENT NO. 85: Develop your final Forest Plan so that the Forest allowable sale quantity decreases if road closures fail and wildlife populations are impacted adversely. If the public were to understand this linkage, then land management agencies might find more support from the public on road closures.

FOREST RESPONSE.

Each of the management areas included in Appendix D of the FEIS has a written description of the primary management objective, in addition to the Forest-wide Standards and Guidelines that must be met in all alternatives. The management directions are expressed as a Habitat Effectiveness Index objective, dead and down tree habitat, old growth tree habitat, and other resource objectives that are affected, at least in part, by the intensity and level of the timber sale and road management programs.

If the management objectives for a particular management area are not being met as determined by the monitoring plan described in Chapter 5 of the Forest Plan; amendments, revisions, or other changes in management activities will be made. Timber harvest levels may indeed be affected As described in the Forest Process Document No. 53, however, the elk habitat model involves more than the amount of timber harvested The miles of roads open to vehicular traffic and the quality of the cover remaining are important considerations of equal weight affecting habitat quality.

COMMENT NO. 86: The FEIS should discuss how logging roads are to be closed, who will pay for closures and monitoring, and what the agency will do if and when road closures fail to protect wildlife.

FOREST RESPONSE:

The direct and cumulative impacts of roads open to vehicular traffic are discussed in the Wildlife section of Chapter IV of the FEIS. Other than to indicate roads will be "effectively closed" in order to meet habitat management objectives for elk and other wildlife species, the FEIS provides only general methods describing how roads are to be closed As the Forest Plan is implemented, each district will develop access and travel management plans indicating which specific roads will be closed and how they may be closed. In general, a wide array of methods may be employed including gates, traps, signs, area closures, and other effective means Closure of roads can often be financed by the "benefiting" project; if a project constructs a road or opens an old one, the costs of closure are financed by the project.

HABITAT EFFECTIVENESS INDEX (HEI)

COMMENT NO. 87 The first decade timber sale program quantity can vary by up to 149 percent between alternatives, while the elk population varies by only 12 percent. Can road closure management really have that much effect or does this indicate a flaw in the model?

FOREST RESPONSE:

The model used to assess habitat effectiveness for elk utilizes several factors including cover, roads open to vehicular traffic, and the quality of available cover Each factor is important and equal in the model. As described in Forest Process Document Number 53, the habitat effectiveness model used is the quadratic mean of the product of: (1) Total available cover, (2) quality of available cover, and (3) miles of roads open to vehicular travel, computed as HEI = (HE cover x HE quality x HE roads) 1/3 As such, the effectiveness of habitat for elk, as well as the resultant potential elk numbers, is not solely or directly related to the timber sale program. Equally important is the management direction and/or constraints applied in the management of the Forest Several elements serve to minimize the variation in potential big game populations between alternatives, including an intensive road closures program; retention of satisfactory cover conditions on winter ranges, riparian and roadless areas; and big game habitat improvement projects. For these reasons the sale quantity may vary significantly with only small changes in either potential elk numbers or in habitat effectiveness indices.

COMMENT NO. 88: Alternative F shows 2.0-2.5 miles of open road per square mile in Table II-15 on page II-106. The Idaho Fish and Game studies recommend no more than 1 25 miles of open road per square mile and show a 75 percent reduction in elk use when 2 miles of road are reached. A Montana study by Lyons showed a 25 percent reduction in elk habitat at 1 mile and a 50 percent reduction at 2 miles of road. Are Oregon elk a different subspecies? The decline over the fifth decade in Alternative F is softened by either huge "improvement" expenditures from an unrealistic budget (which reduces the economics of timber), or by the computer. Empirical evidence indicates the declines will be greater.

FOREST RESPONSE:

The miles of road "open" to vehicular traffic is an integral factor in estimating a habitat effectiveness index for elk, as described in Planning Process Document No. 53. Data from Thomas and others (1979) and Lyons in Montana estimate that 1 1 miles of open roads per square mile of habitat have a 26 percent reduction in effective habitat for elk, while a road density of 2 0 miles per square mile reduces habitat effectiveness by 47 percent The open road density habitat component is tracked and has been used in estimating the effects of implementing the Forest Plan Table II-6(A) and Figure Plates IV-J1 and J2 display the estimated Forest-wide average road densities and "potential" elk numbers by decade.

ROAD DENSITY

COMMENT NO. 89. What are the road densities required to meet wildlife goals?

FOREST RESPONSE:

The Forest made no attempt to establish minimum road densities in order to meet wildlife goals. Many of the management areas shown in Appendix D of the FEIS, however, have an established habitat effectiveness objective that will be one of the "drivers" for achieving desired open road densities. The other principal consideration for road closures is the recreation experience being provided Road densities will be maintained and monitored for each of the 131 allocation areas on the Forest. Tables II-6 and II-8 estimate both the habitat effectiveness indices and the Forest-wide average road densities anticipated for each of the alternatives analyzed The Wildlife section of the monitoring plan displayed in Chapter 5 of the Forest Plan discusses the frequency of inventories, techniques to be used, and the estimated costs to track the stated objectives.

COMMENT NO. 90: What wildlife needs really justify roading a roadless area with the consequent damage to habitat effectiveness?

FOREST RESPONSE:

Few, if any, wildlife needs actually require a road Some possible advantages of roads are that they provide access for habitat improvement work to be accomplished such as water developments, prescribed burning, and fisheries improvements listed in Chapter IV of the FEIS An established road system also makes habitat manipulation possible through timber harvest if there is a need to improve "edge" or after the juxtaposition of cover and forage areas An indirect benefit is the funds, collected through timber receipts under the Knutson-Vandenberg Act, that can be used for wildlife habitat improvements. When some road construction occurs in roadless areas released to management activities through the Forest Plan, road closures in other areas will provide security habitat for big game and other wildlife.

COMMENT NO. 91: How does the model treat off-highway vehicle (OHV) use? Is such use considered to be as detrimental to elk habitat as an open road is? What studies has the Forest relied on in determining the effects of OHV access on elk habitat? Page 4-3 of the Plan states that "conflicts between OHV use and big game will require some adjustments in OHV use seasons and locations." The seasonal adjustments contemplated here probably refer to calving and fawning seasons. What about disturbances to big game and other wildlife during feeding and resting periods at other times of the year? No information is given.

FOREST RESPONSE:

The effects of vehicular traffic and "open" roads on big game and other wildlife species have been identified as an important public issue and concern, as described in Chapter I of the FEIS The Forest recognized these concerns in the development and use of habitat effectiveness indices (HEI's), where the miles of "open" roads are an integral factor in the index. Off-highway vehicle (OHV) traffic is motorized use and is considered as such in the habitat effectiveness index for elk used in calculating the outputs shown in Table II-6. Each of the management areas shown in Appendix D also addresses the use and restrictions related to OHV traffic As an example, on big game winter ranges and other critical habitat areas (such as calving and fawning areas), vehicular access, including OHV use, is much more restricted than on other less-critical areas of the Forest. The Forest has also analyzed the direct and cumulative effects of vehicular and OHV traffic on wildlife species in the Wildlife section of Chapter IV of the FEIS. Some of the literature used in analyzing the effects of vehicular use on wildlife species is listed in the References section of the FEIS.

COMMENT NO. 92: The road system necessary to accommodate maximum timber yields will adversely effect all wildlife species, most dramatically the elk population. The correlation between road construction and elk habitat is well understood by forest management, yet the construction as indicated would seemingly negate that correlation.

FOREST RESPONSE:

In the Roads section under Wildlife and Big Game in Chapter IV of the FEIS, the cumulative effects of road construction and management are shown. In general, alternatives with higher timber harvest levels and road construction have lower potential elk numbers, occasionally 10 percent or more below the state management objective. Alternatives with the lowest level of timber harvest and road construction have the lowest change in potential elk populations and are at the state management objective. The Forest Plan is therefore midrange in impact

The total acres of habitat directly affected by roads in the Plan may appear to be more, but are in fact less than 1 percent of the total Forest. In addition, the acres are not totally lost as wildlife habitat. About 50 percent of the existing roads and most of the planned roads will be closed to vehicular traffic by gates, barriers, area closures, and other effective means. Roads themselves are not the total problem; use of the open roads causes harassment to wildlife. Closed roads are often used by big game and other wildlife as travelways.

The Transportation section under Forest Management Goals in Chapter 4 of the Plan addresses the impacts of roads and road construction. Even though additional roads are constructed, the density of open roads will decline below current levels to an estimated Forest-wide average of about 2 0 miles per square mile of habitat. An active program of road closures will respond to (1) Elk habitat requirements, (2) dispersed recreation needs, and (3) soil, water, and economic criteria.

COMMENT NO. 93: Your analysis of open road density, another critical factor influencing elk habitat effectiveness, shows the two alternatives (**F** & **H**) to have the same open road density. This conclusion does not seem logical in view of the dramatic difference in timber production between the two alternatives.

FOREST RESPONSE:

*As displayed in Table II-6(A), both of the alternatives (**F** & **H**) have different timber harvest levels and road densities. Alternative **H** has a higher projected timber volume and open road miles, and is consistent with the assumptions and consequences described in Chapter IV of the FEIS.*

COMMENT NO. 94: With up to 3 lineal miles of road per section, wildlife disturbance through proximity and noise is a major issue that is mentioned only in passing with respect to big game species.

FOREST RESPONSE:

The direct and cumulative effects of the loss of cover and the disturbance resulting from vehicular traffic on "open" roads are displayed in Table II-8 and discussed in considerable detail in the Wildlife section of Chapter IV of the FEIS. A number of changes and revisions have been undertaken in this section, in order to display more clearly the consequences of roads.

THREATENED, ENDANGERED, AND SENSITIVE SPECIES

ANIMALS

Management and Coordination

COMMENT NO. 1: Since page III-10 is entitled "Sensitive, Threatened, and Endangered Plants," page III-33 should properly be entitled "Sensitive, Threatened, and Endangered Animal Species."

On page IV-75 of the DEIS and page i of the Table of Contents, the title should be changed to read "Environmental Consequences of the Alternatives on Threatened, Endangered, and Sensitive Animal Species." This should provide an analysis of the consequences to the Forest's "sensitive" animal species.

FOREST RESPONSE:

Each of these sections deals with sensitive, as well as threatened and endangered species, and the marginal headings and tables have been changed to "Threatened, Endangered, and Sensitive" plants or animals to conform to Forest Service manual headings Similar changes have been made throughout the planning documents where appropriate

COMMENT NO. 2: "Threatened, endangered, and sensitive" (T/E/S) species sections should include a discussion of the extent of current coordination with the U.S. Fish and Wildlife Service.

FOREST RESPONSE:

As required under Section 7 of the Endangered Species Act, the Forest Service has coordinated with the U S. Fish and Wildlife Service in the development and preparation of the Forest Plan and Environmental Impact Statement, and has prepared and submitted a Biological Assessment analyzing the effects of proposed management activities on all threatened, endangered, and sensitive wildlife species The Fish and Wildlife Service has reviewed these documents and has concurred with the evaluations. Chapter II of the FEIS has been revised to include this information

COMMENT NO. 3. All management areas which are likely to have threatened, endangered, or sensitive species or their habitat should contain wording which indicates that Forest-wide Standards and Guidelines pertaining to these species will be met

FOREST RESPONSE:

The Forest-wide Standards and Guidelines shown in Appendix D of the FEIS are the minimums that will be met in all management areas as they are applied throughout the Forest. The section also includes a description of the standards for threatened, endangered, or sensitive species (and their habitats) that will apply in all management areas.

SPECIES AND POPULATIONS

COMMENT NO 4: The list of sensitive animal species on page III-33 should be amended to include the barred owl, great grey owl, three-toed woodpecker, goshawk, and Lewis' woodpecker.

FOREST RESPONSE:

The list of sensitive animal species has been revised to include all species listed in the Regional Forester's list dated August 1989 None of the species suggested above, however, is included in the regional listing.

COMMENT NO. 5: The Fish and Wildlife Service believes that the Forest estimates of bald eagles on page III-33 are too low and should be replaced by the estimates supplied by the Oregon Department of Fish and

Wildlife, which are as follows: North Fork John Day - 10 to 20, North Fork Umatilla area and Meacham Creek - 10 to 15, and scattered locations - 10 to 20

FOREST RESPONSE:

The Forest estimates of wintering bald eagles in Chapter III are based on available mid-winter bald eagle surveys and include only Forest Service lands. Since then, the Oregon Department of Fish and Wildlife has provided more recent and better data, and the original estimates have been changed to reflect these better data and inventory figures

COMMENT NO. 6: Since the species listed on page III-33 are not listed in the Appendices, they should be in a table that shows their scientific name, status, threats, and habitat.

FOREST RESPONSE:

The document has been revised to include a table in Chapter III of the FEIS listing all threatened, endangered, or sensitive wildlife species, their scientific names, and status

COMMENT NO. 7: The habitat requirements for wildlife species such as mountain lion, gray wolf, wolverine, etc. need to be discussed in greater detail.

FOREST RESPONSE:

The present status of such species as the gray wolf, lynx, and wolverine is discussed briefly in the Wildlife section of Chapter III of the FEIS and in Chapter 4 of the Forest Plan under "Nongame Wildlife Species." Except for the mountain lion, each of these species is classified as threatened, endangered, or sensitive. Therefore, both the species and their habitat will receive appropriate levels of protection, as described in Chapters III and IV of the FEIS, and in accordance with the revised Forest-wide Standards and Guidelines outlined in Appendix D

INVENTORY AND MONITORING

COMMENT NO. 8: On page 2-23 under Information, Inventory, and Research Needs, the Plan should include under Wildlife the need to inventory for T/E/S animals and the need to develop species management guides for the T/E/S species most threatened by proposed management activities.

FOREST RESPONSE:

The need for surveys and/or inventories of all threatened, endangered, or sensitive wildlife species and their habitat has been included in the Inventory and Research Needs section of the Forest Plan in order to identify potential habitat areas and their locations on the Forest.

COMMENT NO. 9: A comprehensive wildlife monitoring program should include frequent sampling to determine if management activities are adversely affecting species, especially rare, threatened, and endangered species. Immediate cutbacks in development activities should be required if and when such activities are determined to be adversely impacting such wildlife species.

FOREST RESPONSE.

The monitoring plan has been revised to reflect more clearly the "Threshold of Variability" column if and when proposed management activities are determined to adversely effect wildlife species. When these management activities affect threatened, endangered, or sensitive wildlife or plant species, immediate steps will be taken in cooperation with both the Fish and Wildlife Service and local state wildlife agencies, as required by law, to suspend, alter, or mitigate such activities.

COMMENT NO. 10: On page 4-58 of the draft Plan under subheading #3, it is not spelled out what will initiate or trigger inventories for T/E/S species. Most rare species have not been adequately studied to

accurately assess or describe their critical habitats. To prevent overlooking an occurrence of a rare species, inventories should be conducted before any management action takes place at a site.

FOREST RESPONSE:

As required by both Federal law and Forest Service direction, inventories for threatened, endangered, and sensitive species will continue to be conducted prior to any management activities that may impact the species or their habitats. Each year for the past 8-10 years, T/E/S plant species inventories have been conducted on areas proposed for timber harvest. Where needed, management activities are altered to eliminate or mitigate any adverse impacts. T/E/S wildlife species surveys also are completed prior to any proposed management activities. The monitoring plan outlined in Chapter 5 of the Plan details some of the surveys, monitoring objectives, and techniques to be used.

COMMENT NO. 11: Monitoring of threatened, endangered, and sensitive species on the Forest can be improved in the Plan by separating needs into species-specific monitoring tasks.

FOREST RESPONSE:

The proposed monitoring plan was summarized in Chapter 5 of the draft Forest Plan. The section has been revised in the Forest Plan to include more species-specific monitoring tasks, more detailed objectives, and updated costs of the monitoring tasks.

COMMENT NO 12: The need for additional surveys to determine winter roost locations for bald eagles should be reflected under Information Needs in Chapter II.

FOREST RESPONSE:

This recognized need has been added to the Information, Inventory and Research Needs section of Chapter 2 of the Forest Plan.

COMMENT NO. 13: If bald eagle winter roosts are present on the Forest, special management considerations may be necessary, beyond what is provided in Forest-wide Management Strategies, for large trees and dead and down tree habitat along riparian areas.

FOREST RESPONSE:

As discussed in Chapter III of the FEIS, small numbers of bald eagles occur on the Forest as scattered winter migrants, but no definite winter roost sites have been identified. If such sites are identified during monitoring activities, adequate protection will be provided according to the Endangered Species Act of 1973, as amended in the bald eagle recovery plan, and as listed in the Forest-wide Standards and Guidelines shown in Appendix D of the FEIS.

COMMENT NO. 14: There is a need to do an annual inventory of historic and potential eyries within the Forest boundaries for possible peregrine falcon occupation.

FOREST RESPONSE:

The Forest has no record of historic peregrine falcon eyries within its boundaries The monitoring plan, however, has been revised to include periodic surveys of potential peregrine nesting sites in order to verify their presence and/or distribution on the Forest.

COMMENT NO 15. Inventory and monitoring needs for bald eagles and peregrine falcons should be clearly outlined in the monitoring plan. Long-term monitoring of bald eagle winter populations is needed before delisting can occur.

FOREST RESPONSE:

Provision for the monitoring of bald eagles and other threatened, endangered, or sensitive wildlife species was made in the monitoring portion of Chapter 5 of the Forest Plan Specific inventory and monitoring needs, however, were not clearly identified, and the monitoring plan has been revised to identify the specific needs.

PLANTS

MANAGEMENT AND COORDINATION

COMMENT NO. 16: The Forest should make the management of native plants a formal planning issue.

FOREST RESPONSE:

Chapter I and Appendix A of the FEIS discuss development of the planning issues. The issues have been identified and developed over the entire period in which the Plan has evolved. Appendix N to the FEIS contains a summary of the public comments received on the draft documents. Throughout the process (begun in 1980 and ongoing since that time), the Forest has made an effort to involve interested publics in the formulation of "issues, concerns, and opportunities " Several series of public meetings were held, workshops were conducted, and numerous mailings were sent out to solicit public comment Consultation with agencies, interest groups, and individuals has been constant throughout the process. The final nine issues are a result of careful study; they represent the areas of major public interest and are a condensation of the public's views and preferences for the direction of management on the Forest. Because they are the management issues that concern the public most, they are the ones that need to be resolved during the next 10-15 years.

COMMENT NO. 17· The discussions on T/E/S plants are found under different major headings throughout the Plan The Plan should discuss this subject under the same section.

FOREST RESPONSE.

All discussions concerning T/E/S plant species are now located under the major sections titled "Threatened, Endangered, and Sensitive Species." Both animal and plant species are included in the sections

COMMENT NO. 18: The Forest should adopt a stated policy regarding the management of native plants and their habitats. Page 4-23 lacks a statement of forest management or conservation direction for sensitive plants.

FOREST RESPONSE·

The Forest-wide Standards and Guidelines in Appendix D of the FEIS and Chapter 4 of the Forest Plan state the Forest goal for T/E/S species management.

COMMENT NO. 19: More specific Forest-wide Standards and Guidelines for sensitive plant species should be developed; those listed are extremely scanty and completely inadequate.

FOREST RESPONSE:

Minor wording changes have been made in the Forest-wide Standards and Guidelines to reflect the Forest emphasis on sensitive plant species. The interdisciplinary team believes that the Forest-wide Standards and Guidelines found in Chapter 4 and the monitoring requirements stated in Chapter 5 of the Forest Plan provide for proper protection and management of sensitive plant species.

COMMENT NO. 20: The Plan should clearly specify what steps will be taken to maintain sensitive native plant species and naturally evolved plant communities in the Wilderness Area Standards and Guidelines. These prescriptions should include the statement, "manage to maintain and enhance sensitive species populations and their habitats."

FOREST RESPONSE:

The wilderness management area description (B1-Wilderness subsection) in Chapter 4 of the Forest Plan directs, in part, to "maintain wilderness characteristics so that plants and animals develop and respond to natural forces Natural ecological succession will be allowed to occur Emphasis is on protecting and enhancing wilderness character." To comply with the 1964 Wilderness Act, steps will not normally be taken to maintain sensitive plant species in wildernesses; natural ecological succession will be allowed to determine a population's numbers. Only if human influences are responsible for a population's decline will steps be taken to maintain or enhance it Those steps would have to be determined on a case-by-case basis, depending upon the nature of the influence, and would be stated in the wilderness activity plan for the area

COMMENT NO. 21: Alternatives with a higher degree of ground- and vegetation-disturbing activities should reflect greater potential impacts to T/E/S plant and animal species.

FOREST RESPONSE:

The potential impacts you mention are addressed in the T/E/S Species section of Chapter IV of the FEIS.

COMMENT NO. 22: The Forest Plan should state that the Forest will comply with the provisions of the Oregon State Endangered Species Act of 1987 for those forest lands in the State of Oregon.

FOREST RESPONSE:

The Introduction to Appendix D of the FEIS and Chapter 4 of the Forest Plan states that Forest-wide Standards and Guidelines and the management area direction will implement requirements set forth in Federal legislation and in applicable state and local laws. The Forest will comply with the provisions of the Oregon State Endangered Species Act of 1987 and all other state laws and regulations unless they are in conflict with Federal regulation; in any such cases, the Federal legislation would take precedence over state law on National Forest System lands. The planning documents do not list all the applicable state and local laws.

COMMENT NO. 23: The Plan should reinforce the Forest commitment to cooperate and consult with the States of Oregon and Washington (Department of Natural Resources-Washington Natural Heritage Program for rare plant species) on the preservation of natural diversity. In paragraph 5 on page 4-58, the Plan should reflect the intent of the Memorandum of Understanding with the Department of Natural Resources—Washington Natural Heritage Program

FOREST RESPONSE:

The Forest continuing commitment to cooperate and consult is stated in the T/E/S Species section of the Forest-wide Standards and Guidelines (Appendix D of the FEIS and Chapter 4 of the Forest Plan).

COMMENT NO. 24: The Forest should consider other actions within its authority which will promote the recovery of listed species. (See Section 7(a)(1) of the Endangered Species Act.)

FOREST RESPONSE:

It is the Forest intent and responsibility to comply with all legislative actions, including applicable state and local laws.

SPECIES AND POPULATIONS

COMMENT NO. 25. The list of sensitive plant species found in Appendix L should be updated to reflect recent status changes, additions, and deletions published in 1987 by both the Washington Natural Heritage Program and the Oregon Natural Heritage Data Base Program.

FOREST RESPONSE:

Appendix L has been updated, and is current to December 31, 1988. Input from the Heritage Program of both states is the basis for development of the Regional Forester's sensitive plant list for Region 6, which is one of the main sources for information listed in Appendix L. The updated appendix also includes the sensitive species suspected to occur on the Forest; the list formerly included only documented species.

COMMENT NO. 26: Table III-6 on page III-12 should not target the lupine species in general as a problem plant. Rather, it should differentiate *Lupinus sabinii* as a rare native plant in order to assure adequate protection of the species and its habitat.

FOREST RESPONSE:

Table III-7 in the FEIS has been footnoted to differentiate Lupinus sabinii as one of the documented sensitive plants on the Forest. The discussion in the Noxious Weeds and Poisonous Plants section of Chapter III of the FEIS notes that control efforts on poisonous plants have not been initiated because the species have not been abundant and forage conditions are favorable. Singling out Sabin's lupine from other members of the genus will highlight the Forest concern for proper protection of the species, but the table is correct in listing all lupine species as being plants poisonous to domestic livestock.

COMMENT NO. 27: The threatened male fern and the sensitive hoary chaenactis should be given special consideration to ensure preservation.

FOREST RESPONSE:

They have been given special consideration by virtue of being placed on the list of sensitive plant species for the Umatilla National Forest. The list contains 22 documented species (complete with current population numbers of each) and another 24 suspected species, and is detailed in Appendix L to the FEIS. The appendix states there are 68 male fern plants and 678 chaenactis (dusty maiden) plants currently inventoried on the Forest.

INVENTORY AND MONITORING

COMMENT NO. 28: Management prescriptions for all land use classifications should include provisions for monitoring and minimizing harmful impacts on native plant communities. How management conflicts between sensitive plants and other management objectives may be resolved should also be stated.

FOREST RESPONSE:

The entire planning process—from issue development through mitigation measures—has been used to minimize conflicts, including those concerning sensitive plants. Mitigation measures are found throughout Chapter II and in the T/E/S Species section of Chapter IV of the FEIS. Monitoring requirements are stated in Chapter 5 of the Forest Plan. Although some management areas (such as A9 and D2) are designed to meet requirements, most management area directions (FEIS Appendix D and Chapter 4 of the Plan) do not include such provisions. Management requirements for T/E/S species instead are found in Forest-wide Standards and Guidelines, which are intended to resolve issues and conflicts for all management areas.

COMMENT NO 29. On page 2-23 under Information, Inventory, and Research Needs, the Plan should include the need to inventory for T/E/S plants and the need to develop species management guides for the

T/E/S species most threatened by proposed management activities. The Forest should prepare species management guides for sensitive species that may be adversely affected by management practices.

FOREST RESPONSE:

The needs for complete Forest inventory and species management guide preparation for sensitive plant species has been added to Chapter 2 of the Forest Plan. As stated in the monitoring plan in Chapter 5 of the Forest Plan, the Forest intent is to prepare species management guides for all listed species during the planning period. The Forest's first guide, for Lupinus sabinii, is scheduled for completion in 1989.

COMMENT NO. 30: The Forest should develop site-specific management plans for habitat of identified T/E/S species. Clearly defined protections for the habitats of each state-listed species also should be provided.

FOREST RESPONSE:

The species management guides detail such species-specific items as areas inhabited, population numbers, and habitat management needs (including protection measures as appropriate).

COMMENT NO. 31: Monitoring plans for T/E/S animals and plants should take into account: inventory and information accomplishments; data storage and use, consistent use of the biological evaluation process for T/E/S species during project planning, development, implementation, and review of species recovery plans (federally listed species) and species management guides (non-federally listed species on the Regional Forester's sensitive species list); population trends; and protection accomplishments for T/E/S species and their essential habitats.

FOREST RESPONSE:

The monitoring plan for T/E/S species in Chapter 5 of the Forest Plan has been expanded to include: (1) Acres inventoried; (2) species management guides prepared; and (3) population totals.

COMMENT NO. 32: Due to the number of species involved and the high likelihood of a need for frequent project-level field inventories, the Forest should employ at least one full-time botanist if the public is to have any faith in the reliability of the sensitive plant program, or in the adequacy of your proposed guidelines and monitoring program.

FOREST RESPONSE:

The Forest Service ecology program in Oregon and Washington is organized on a zone basis. The Area Ecologist for the Umatilla National Forest is stationed in Baker City, Oregon, and also has responsibility for the Malheur and Wallowa-Whitman National Forests. He supervises two other full-time ecologists—one is involved in plant succession/site potential studies, the second works almost exclusively with riparian area inventory and classification. The Umatilla also employs one botanist on a summer-long, recurring basis. He conducts all the Forest sensitive plant surveys (and has since 1982), prepares species management guides, and assists in riparian area classification and improvement efforts. Other personnel on the Forest have varying levels of training and experience in sensitive plant identification and inventory.

COMMENT NO. 33: The surveys for T/E/S plants identified on page 4-10 should be accomplished much sooner than 50 years from now and should be designed to focus first on those species and areas subject to timber management, road construction, and livestock grazing. The Forest has not been adequately inventoried to determine the sensitive species habitats present. Plant surveys should be conducted well in advance of planned ground-disturbing activities to assure accurate inventory results.

FOREST RESPONSE:

The wording in the Forest Desired Future Condition has been clarified slightly to reflect expected survey completion Survey needs are identified in project-specific analyses Surveys are currently covering about 50,000 acres per year, in advance of any project implementation If current funding levels can be maintained, the entire Forest should be inventoried in about 15 years

COMMENT NO. 34: More rare plant habitats should be located, inventoried, and added to existing Research Natural Areas (RNA's) and botanical areas

FOREST RESPONSE:

The preceding response outlines the Forest current inventory practices. Inventory results (species, population size, locale, etc) will determine if an additional botanical area is needed or an unfilled Research Natural Area (RNA) cell has been located Sensitive plant surveys conducted during the last 7 years resulted in the creation of four botanical areas and one new RNA (The Cove) in the final Plan.

RIPARIAN AREAS

GENERAL RIPARIAN MANAGEMENT

COMMENT NO 1: What are the designated riparian habitat areas?

FOREST RESPONSE·

Riparian area is defined in the Forest Plan Glossary as a geographically delineated area with distinctive resource values and characteristics that is comprised of aquatic and riparian ecosystems This includes floodplains, wetlands, and all areas within a minimum horizontal distance of 100 feet from the normal line of high water of a stream channel or from the shoreline of a standing body of water Riparian areas are typically identified as C5 Management Areas or have been included in other management areas

COMMENT NO 2. We encourage you to reclassify much of the riparian zones in your Forest and that they be managed separately from the general forest as distinct and unique areas of critical environmental concern.

FOREST RESPONSE.

The importance of riparian areas was recognized early in the planning process with the identification of the riparian issue, described in Chapter I, FEIS. One response to resolving the issue was development of the C5 and C6 Management Areas and related riparian Forest-wide Standards and Guidelines found in Appendix D of the FEIS. In the Forest Plan, perennial streams are managed as C5 Management Areas or by applying Forest-wide Standards and Guidelines Specific designations or directions will separate the riparian areas from the general forest and give recognition to the unique and distinct values of the areas.

COMMENT NO 3: The preferred Plan recognizes that there is a standard of riparian production (fish) towards which the managers must actively work. There is also a recognition of a desired condition that existed in those times before heavy management impact occurred Why does such a recognition operate in this issue and not with all the other issues?

FOREST RESPONSE:

Emphasis is on riparian areas because riparian management was identified as an issue of major public interest Different methods for resolving each of the issues were developed and used. In the case of riparian areas, two of the methods are standards and guidelines and management areas; each is designed to achieve management goals with ecological potential of riparian areas in mind. Other approaches are used to help resolve other issues, depending on the nature of the issue. Standards and guidelines, management areas, mitigating measures, and other measures for each resource were designed and selected to meet resource objectives, to resolve issues and reduce conflicts, and to improve resource condition. The focus of some of the methods is to achieve the ecological potential of an area.

COMMENT NO. 4· There is little or no protection for headwaters and these could be considered the most valuable areas of all. It does little good to protect Class I and II streams if the water coming into these higher order streams from the headwaters is already degraded. We recommend that the Forest Service declare buffer zones: (1) Of 100 feet or so about all Class I-III streams and 50 feet about all Class IV streams and headwaters, or (2) at least as wide as the tallest local tree height. Riparian standards should apply to all riparian habitat regardless of stream classification, including Class IV and ephemeral.

FOREST RESPONSE.

A high degree of riparian and watershed protection was proposed in the draft Plan and carried over, with some improvements, into the final Plan Direction for protection of intermittent and perennial streams is found in the Forest-wide Standards and Guidelines in Appendix D of the FEIS and Chapter 4 of the Forest Plan. Management direction for headwaters focuses on maintaining water quality at or

above existing established water quality goals for downstream waters Best Management Practices (BMP's) involving woody vegetation and ground cover, felling, skidding, and road construction, grazing, and riparian area recovery are included in the standards and guidelines. BMP's are also described in Appendix E.

COMMENT NO. 5: The Forest wisely recognizes that a variety of development practices along or in streams has in the past has "degraded the quality of the fish habitat on about 20 percent of the fish bearing streams on the Forest" (DEIS I-20). We strongly urge the Forest to take this past record of stream degradation as a lesson and to alter or eliminate those practices which have impacted streams in the past in order that the streams and rivers on the Umatilla do not continue to be degraded

FOREST RESPONSE:

Some past practices, such as heavy timber harvest, livestock grazing, and dredging operations, have been corrected and are not planned in the future Forest-wide Standards and Guidelines, including Best Management Practices and C5 Management Area direction will be used to protect streams and adjacent areas to maintain aquatic resources.

COMMENT NO. 6: Pages 3-8 and 2-13 state: "Most of the riparian areas are in good condition except for areas impacted by historic gold dredging, grazing, and road building." According to DEIS page III-34, riparian areas have been gradually improving. What data and methods are used to make these determinations of riparian vegetation condition and fish habitat? What is good condition? These need to be specified because vegetation condition is not necessarily indicative of the condition of fish habitats. How much is "most of the riparian"?

The Umatilla EIS is generally a very comprehensive report and covers most issues of controversy, but needs a rating for all adjacent riparian zones.

The DEIS and proposed Plan were difficult to evaluate because no maps of riparian management activities, stream class, or current condition were displayed It is important that site-specific data be collected and be made available for all rivers on the Forest.

We place a strong priority on the evaluation of existing conditions on riparian areas for comparison to the grazing management system in effect and would like to be part of that process whenever possible.

There is no inventory of wetlands identified for the Umatilla National Forest, but statements in the text indicate their presence. Protection of these areas must be assured

FOREST RESPONSE:

Numerous surveys and inventories have been completed through the years—of streams, watersheds, fish, riparian, rangelands, and soils, to name a few. A large bank of data has been accumulated bank of data, but most of it was achieved on a single-function basis and was not well coordinated or integrated with the other resource needs

Stream surveys referenced in Chapter III (back of divider sheet) of the FEIS include a riparian survey that collected information on zone width, plant composition, ground cover, and vegetation overhanging the streambank. A channel stability evaluation was also conducted that looked at upper streambanks, lower streambanks, and channel bottoms. The detailed wetlands inventory is on file in the Supervisor's Office of the Umatilla National Forest

The generalizations concerning past riparian area activities and existing conditions are based on the information available from existing surveys and inventories and the best professional judgment of the Forest fisheries biologist and other specialists working on the Umatilla National Forest. Numerous range condition transects also serve as the basis for the general statement about a gradually improving trend. The statements apply to the Forest overall, but some areas are in less desirable condition than others.

The field of riparian area management is changing rapidly, with new information constantly becoming available. A riparian area ecological inventory and classification, which began in 1988, and is scheduled for completion in 1994, will detail existing condition and potential for individual riparian zones. In

addition, a limiting factors inventory tailored to determine riparian fish relationships and vegetative condition is planned for most streams on the Forest. Schedule of inventories is shown in Forest Plan Appendix A.

Class I, II, and III streams were mapped in the draft Plan. The Forest Plan map displays Management Area C5 A riparian area condition map will be developed as a part of the Forest-wide survey in progress, but the information will not be available for inclusion in the Forest Plan What is learned at one site can be used on similar sites to guide management direction

Allotment management plans (AMP's) detail the grazing systems currently in use. As part of the AMP process, riparian vegetation condition and trend are inventoried. A detailed comparison of the relationship between current condition and grazing systems can be made after the riparian area inventory is completed. AMP updates establish allotment objectives, direction, and monitoring needs based on the inventories as scheduled in Appendix A of the Forest Plan

COMMENT NO. 7: The text on page 4-5 of the Forest Plan explains that completion of stream inventories in the future will allow managers to more accurately predict environmental effects. How is a "less than ideal inventory" dealt with in managing Forest activities today and in the near future?

FOREST RESPONSE:

Management decisions are based on the best information available at that point in time. At the start of the Forest planning process, the interdisciplinary team (IDT) evaluated available data and judged that riparian information was sufficient to make Forest planning decisions without conducting additional inventories. Forest planners also recognized the limitations of the information. For the short run, managers have the opportunity to identify information needs during the scoping process of project planning to assure that adequate information will be available for decisionmaking purposes. Long-term inventory and research needs are summarized in Chapter 2 of the Forest Plan, and inventories scheduled are shown in Appendix A. As new information becomes available, Forest Plan riparian objectives and direction may be updated.

COMMENT NO. 8: If "BMP's (Best Management Practices) for Class IV stream areas will be concerned primarily with preventing soil movement, including slumps, earth slides.. ." (Plan 4-44), how will this be accomplished by maintaining streambank stability and fish habitat capability at existing levels?"

FOREST RESPONSE:

Through the application of Best Management Practices (BMP's), the Forest expects to maintain or restore biological, chemical, and physical qualities of Forest fish habitat. The Forest has dropped the reference to maintaining streambank stability and fish habitat capability at existing levels in the Forest-wide Standards and Guidelines in Chapter 4 of the Forest Plan.

RIPARIAN/TIMBER MANAGEMENT

COMMENT NO. 9: The Forest-wide Standards and Guidelines seem to suggest that logging activities will not occur in Class I, II, and III streams. Does this mean that there will be no a no-cut buffer within the riparian zone? If this is so, why is there any need to coordinate logging activities in streams?

FOREST RESPONSE:

Management direction to retain trees immediately adjacent to perennial streams for future instream habitat does not imply that preclusion of harvesting within the riparian area is always necessary to meet instream goals and riparian objectives. In fact, in the final Plan, many areas next to perennial streams are managed under the C5 Management Area direction, which permits timber harvest Essentially, the C5 direction calls for uneven-aged management in riparian areas, with small created openings and single tree selection near streams. Forest-wide Standards and Guidelines found in Appendix D of the FEIS and Chapter 4 of the Forest Plan provide additional guidance for all streams. They have not been designed to eliminate logging adjacent to perennial streams but rather to facilitate meeting riparian area

objectives. Specific measures to coordinate logging activities will be developed at the project level (using project Best Management Practices (BMP's) to insure protection of riparian values

COMMENT NO. 10: Under the preferred alternative, many stream corridors within the Forest are bordered by management areas which allow considerable timber harvest activities. Clearcutting adjacent to wet meadows and riparian areas can destroy the water balance of these areas Alternative harvest practices such as selection cutting or use of buffer zones for these critical areas have been disregarded. Management areas bordering rivers and streams should emphasize maintenance of fisheries and riparian wildlife habitat. The Forest should consider greater use of restrictive management strategies (such as C7, A1, or A8) adjacent to streams, including the Wenaha River corridor, to provide buffer zones.

FOREST RESPONSE:

The standards and guidelines in the Forest Plan relating to timber harvest and riparian area management have been revised to provide additional protection to riparian dependent values. The management guidelines for riparian areas are found in the Riparian/Fish Habitat and Water sections of the Forest-wide Standards and Guidelines and the management direction for Management Area C5 in Chapter 4, Land Management Plan, and Appendix D, FEIS.

Riparian areas within other management strategies have features which would require even more restrictive management of riparian areas For example, the Wenaha River is now a designated Wild and Scenic River by virtue of 1988 Congressional action, and will be managed according to A7 and B1 Management Area direction Other management areas are A1, A2, C7, C8, and F4.

Riparian area management activities emphasize protection of water quality, maintenance or improvement in stream surface shading and temperature, maintenance of stream channel stability, future continuous supplies of large woody material, and maintenance of riparian terrestrial wildlife habitat. Except where prohibited by more restrictive management area direction, some timber harvest is allowed in many riparian areas However, harvest has been restricted to meet riparian management direction and will be conducted using Best Management Practices (BMP's) designed to meet water quality goals. Uneven-aged management practices are featured in these areas. Clearcut harvest adjacent to stream channels would be allowed on a limited basis and then only where stream surface shading and other requirements are met. Single tree selection will be the preferred management strategy within 50 feet of streams.

COMMENT NO. 11: A single, nonrenewable use can in no way compare mathematically with riparian values that continue indefinitely and that grow in value over time Prove that it is cost-effective to log in riparian areas.

FOREST RESPONSE:

Please review the revised Forest-wide Standards and Guidelines in Appendix D of the FEIS and Chapter 4 of the Forest Plan for riparian area management Timber harvest is, and will continue to be, coordinated with riparian area goals and objectives The cost effectiveness of timber harvest techniques proposed in riparian areas is a part of the forest planning process detailed in Appendix B of the FEIS and is reviewed during project planning on a site-specific basis Forests in riparian areas are a renewable, growing resource that can provide value – either standing or as a product.

COMMENT NO. 12: We would applaud greater emphasis on the use of cabling or helicoptering to remove timber in riparian areas.

FOREST RESPONSE:

Timber harvest techniques are chosen during project design and alternative selection to meet project objectives. These logging techniques are certainly available, as discussed in Appendix E and Chapter IV of the FEIS, as effective mitigation for reducing potential impacts of timber harvest.

COMMENT NO. 13: Management Area C7 permits salvage timber harvest in riparian areas. Thus, despite the statement that timber harvest is not scheduled in riparian areas of the upper tributaries of the North Fork

of the John Day, your stating that this area contains significant stands of "salvageable" lodgepole pine indicates that timber harvest in the riparian areas is a very real possibility.

FOREST RESPONSE:

The lodgepole salvage program, which began in the late 1970's to harvest beetle killed lodgepole, has been mostly completed. Salvage stands have been sold and are in the harvest process Future salvage activities will be planned on a case-by-case basis and will be subject to the standards and guidelines for riparian area management as described for the C7 Management Area and project review through the NEPA process. The goal of the C7 Management Area is to maintain and enhance water quality and produce high levels of anadromous fish habitat on an area-wide basis. The Forest expects to meet the goal.

COMMENT NO. 14: The following guidelines need to be revised (page 4-44): 9 F, because the degree of ground disturbance should be defined (and minimized) and a minimum no harvest buffer width of at least 100 feet on each streamside should be identified, and 9.G, which we do not understand.

FOREST RESPONSE:

The Forest's focus is on site-specific prescriptions Therefore, a minimum ground disturbance distance was not identified because of the variability of sites to accept disturbance and still meet resource objectives; Guideline 9 G concerning streambanks has been dropped from the standards and guidelines because the concern for streambank vegetation is better met by limiting ground-disturbing activities to the degree necessary to maintain and protect water quality and fish habitat, and by grazing livestock according to principles which will protect soil, vegetation, and water quality.

COMMENT NO. 15: On DEIS page IV-79, it is not clear whether any of the alternatives avoids management activities in riparian zones for anadromous fish or resident fish, or both. If none of the alternatives does, was this considered during development of the DEIS/Plan?

FOREST RESPONSE:

All alternatives propose some level of regeneration timber harvest, reforestation in riparian areas, and grazing, depending on the goals of the alternative Since each alternative design is based on combinations of management area direction and Forest-wide Standards and Guidelines application, alternatives will vary according to acres harvested (an issue indicator) and management intensity Management Area C6, for example, is very protective near the stream but allows many activities; C5 is the most restrictive throughout the area Management Area A7 is concerned with managing the area and stream for visual qualities A review of Table II-4 of the FEIS shows the extent to which each management area (timber management) was used in the different alternatives. Within each alternative, grazing activities are permitted in riparian areas as long as requirements in the revised Forest-wide Standards and Guidelines are met It turned out to be possible to fully meet riparian area management objectives while allowing a varying level of activity; an alternative proposing no activity was not developed.

RIPARIAN GRAZING

COMMENT NO. 16: The USFS study of Meadow and Camp creeks (Wallowa-Whitman Forest) seems to give credence to the impossibility of intensive riparian grazing. As the Oregon Regional Fishery Biologist for the Department of Fish and Wildlife noted, it "may take a decade or more for protected streams to heal after generations of abuse." William Platts and others were unable to identify any widely used grazing strategy that was capable of maintaining high levels of both forage and rehabilitation in riparian zones. As he and Dan Guthrie (OSU) note, intensive, short duration grazing sometimes worked as long as any vegetation, etc., is not already degraded, there is close monitoring, soil is resistant, streams fenced, and the riparian pasture is separately managed. As Guthrie notes, this approach is "practically never" followed on Federal land with allotments. I challenge you to show that you can economically graze riparian areas.

FOREST RESPONSE:

Grazing management strategies for riparian areas are in the Forest-wide Standards and Guidelines in Appendix D of the FEIS and Chapter 4 of the Forest Plan and are prescribed during allotment management plan updates. Livestock management techniques are chosen to fit each unique situation to meet riparian area management objectives A discussion of the effects of livestock grazing in riparian areas is found in Chapter IV of the FEIS For additional discussion of the economics of grazing, please refer to the economics portion of Chapter IV and the Forest Service responses to public comments on range in Appendix N.

COMMENT NO. 17: You have an obligation under law to restrict grazing where it conflicts with other uses and values. Intensive grazing has been a massive failure "Grazing systems, to be successful, need to be on gentler terrain with minimal altitude change between pastures. Cattle tend to congregate in choice grazing areas such as meadows and canyon bottoms. Overgrazing is so serious in such rough mountain ranges as to raise the question of whether cattle should be grazed at all" (Stoddard, Smith and Box 1975). The Umatilla is heavily sloped!

FOREST RESPONSE:

The Forest has an obligation to manage National Forest System lands according to all legislative direction and regulations, including those set forth in the Multiple-Use Sustained-Yield Act which recognizes grazing as a multiple use. "State-of-the-art" knowledge concerning grazing systems continues to be developed, largely in universities and USDA Experiment Stations across the Nation Regardless of the system used (or the terrain) within an allotment, its success is achieved by allowing forage utilization only to the stated objective levels, which are designed to avoid situations of overgrazing. Forest-wide Standards and Guidelines for riparian, uplands, and transitory range areas are found in Appendix D of the FEIS and Chapter 4 of the Forest Plan

COMMENT NO. 18: There is a greater chance of success with larger benefits if riparian zones are managed for the benefit of the water quality and fishery and not for cattle grazing Excluding cattle from riparian zones is economically more cost-effective than small, costly habitat improvement projects. Such habitat monies could instead be spent on fencing riparian areas and allowing for limited access points for cattle to use the areas.

FOREST RESPONSE:

The water quality and fisheries objectives can be met with the Forest-wide Standards and Guidelines for riparian area management and Management Area direction found in Appendix D of the FEIS and Chapter 4 of the Forest Plan Techniques for livestock management in riparian areas are chosen to meet riparian area objectives Corridor fencing is one technique considered, but it is generally used as a last resort because of the high expenses for both construction and maintenance In addition to fisheries and water quality values, riparian zones have values for hunting, camping, timber, and wildlife habitat; all were considered in the forest planning process and are analyzed during project alternative selection

COMMENT NO. 19: We strongly encourage the reduction of overall grazing and timbering in riparian areas to a less than moderate level, with a slow phasing cycle to minimum levels over the next decade in order to allow natural rehabilitation of riparian areas. It has been proven that riparian areas recover quickly when grazing is severely or totally restricted.

FOREST RESPONSE:

The application of riparian area standards and guidelines found in Appendix D of the FEIS and Chapter 4 of the Forest Plan will be sufficient to meet riparian area goals and objectives. For example, management area direction for C5 limits the amount of timber harvest activity. The Range section of the Forest-wide Standards and Guidelines lists allowable forage utilization levels in riparian areas. Monitoring efforts measure the degree of success of Forest Plan implementation with riparian area recovery rates across the Forest being one measure of that implementation.

COMMENT NO. 20: Riparian areas are extremely sensitive to degradation by livestock, and stringent regulations of grazing in these areas is implied by National Forest Management Act (NFMA). Management guidelines for riparian area range in the draft Plan are quite vague Provide specific utilization standards for all riparian habitats with respect to domestic livestock. Adjust for range type, condition, grazing season, season of use, and for specific forage type. Do not limit utilization standards to only class I and II streams. The standard for bluegrass is too high; limit it to 50 percent (Plan 4-46).

FOREST RESPONSE:

Management area direction and several sections of the Forest-wide Standards and Guidelines address management of riparian areas (Appendix D of the FEIS and Chapter 4 of the Forest Plan). Revised standards concerning allowable forage utilization levels in riparian areas are found in the Range section.

COMMENT NO. 21: Grazing in the Tucannon riparian area should be phased out as there is no economic justification to override the riparian values of the area.

FOREST RESPONSE:

Much of the Tucannon River riparian area within the Forest boundary is non-Forest Service land and riparian management is, therefore, outside Forest Service control. Riparian management objectives for the Pomeroy allotment, which includes limited portions of the Tucannon River, will be revised within the next 3 years as part of our allotment management plan update process. (Refer to Appendix A of the Forest Plan)

COMMENT NO. 22: Salting livestock by proper methods, and proper development of watering areas are the best methods for protecting riparian areas.

FOREST RESPONSE:

Locations of salt for livestock and development of upslope watering sites can be effective in influencing cattle distribution away from riparian areas, but are probably not the best methods of protection. Bryant (1982) reported that neither salt placement nor alternate water location away from the riparian zone influenced livestock distribution appreciably (refer to the References section of the FEIS for a complete article title) Development of, and adherence to, detailed grazing systems will probably be the most effective method of accomplishing established riparian area objectives.

RIPARIAN FENCING

COMMENT NO. 23: If fencing is required to maintain water quality, who will determine need, location, and responsibility?

FOREST RESPONSE:

Requirements for meeting management objectives are finalized during allotment management plan updates, annual operating plan reviews, and project design and alternative selection. Forest managers, grazing permittees, and other individuals identified during the scoping process all help finalize management techniques. Individual watershed improvement needs may also be identified during the site-specific planning process. Implementation and monitoring to insure that water quality and riparian objectives are met is the responsibility of permittees and Forest managers.

COMMENT NO. 24: An issue that should be addressed is the fencing off of streams in question into pastures for smaller numbers of cattle, for shorter periods, and at different times of year. I certainly will work with the Forest Service to help manage the streams.

FOREST RESPONSE:

Your willingness to work with the Forest in meeting the riparian area management goals and objectives is appreciated. Riparian pasture fencing is one of the most promising techniques available to the resource manager because of the benefits you listed in managing cattle distribution.

COMMENT NO. 25: It is possible to overreact on this riparian protection I heard rumblings of fencing stream corridors, etc. Some of those corridors would eliminate water from some allotments. Hard feelings, lawsuits, bitter quarrels, and intimidation would arise from a paying permittee for a nonpaying fish.

FOREST RESPONSE:

There is strong rationale for a high level of riparian area protection because of the resource values involved—water, soil, fish, wildlife, etc.—and the public's identification of riparian areas as a Forest planning issue However, corridor fencing is one of the least desirable techniques for riparian area protection, largely because of the expense of fence construction and maintenance, and is generally used as a last resort Implementing detailed grazing systems that control livestock numbers and seasons of use, and the use of riparian pastures within the systems, are more desirable techniques to control livestock distribution

As described in the Riparian Issue (FEIS, Chapter I), sportsmen's groups, state wildlife agencies, and many others are concerned about riparian condition in management of fish; fishing is a highly popular activity, in part supported by fishing licenses.

COMMENT NO. 26: We believe that fencing: (1) Unduly restricts livestock access to water, which renders adjoining rangelands essentially useless; (2) generally does not accomplish its intended purpose; and (3) is excessively expensive to construct and maintain. Recent scientific research indicates grazing use of up to 70 percent of capacity actually improves the condition and distribution of riparian vegetation (Bryant, Larry D., USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Forestry and Range Sciences Laboratory, La Grande, Oregon 1985). The results also show that fencing is the surest way to destroy riparian areas Naturally occurring ice jams and floods do far more damage to riparian areas than reasonable levels of grazing use.

The final Plan should emphasize ways other than fencing to reduce concentrated cattle use of riparian areas. Options could include such practices as: (1) Controlling season of use and livestock numbers in pastures containing riparian areas, (2) development of alternative water sources, (3) salting, (4) seeding and burning to improve range conditions on nonriparian rangelands, and (5) greater reliance on transitory ranges created by timber harvest activities in order to disperse the effects of grazing over a larger land base. Given the moderate grazing level proposed in the draft Plan, these measures should effectively reduce the impact on riparian sites and water quality without relying on fencing.

FOREST RESPONSE:

The Forest agrees that emphasis should be on grazing systems techniques developed during allotment management plan updates, but riparian area objectives should not be compromised if other techniques are not fully successful. Fencing riparian areas to achieve riparian area objectives does have many drawbacks, but it can be an effective technique when wisely used. Platts and Wagstaff (1984) discuss the costs and benefits of the fencing alternative and concluded that fencing should be evaluated for the most valuable reaches of streams (refer to the References section of the FEIS for the complete article title). It is a technique that should be available to the manager and permittee, but is usually not the first choice. Bryant's paper, cited as recent scientific research, has been criticized because he looked only at grass-forb production in riparian areas. While it is true that grasses and forbs play an important role in streambank stability, it is predominately the shrubs and hardwoods that provide stream surface shade in stream reaches not dominated by conifers. The Forest could find nothing in the referenced research to support the conclusion that fencing is the surest way to destroy riparian areas.

It is true that ice dams and floods can cause severe damage to riparian areas. Ice and flood damage are typically greater problems in areas lacking shrubs and hardwoods because the riparian vegetation canopy moderates extreme low temperatures as well as high summer temperatures and provides excellent streambank protection. Ice and flood damage to a riparian area may be a symptom of an

overgrazing problem. Refer to the Range and Riparian/Fish sections of Chapters III and IV of the Forest Plan for more detailed discussions.

RIPARIAN CONDITION

COMMENT NO. 27: "Vegetation along anadromous and resident fish bearing streams will be in a fair or better condition class with a stable or upward trend." If the condition class is less than fair (i.e., poor), the condition class will be raised through mgmt.; if condition class is fair, the language indicates it is adequate to simply maintain the present condition. These are supposed to be standards for Class I and II streams. These standards are hopelessly weak in regard to "fair" streams.

"In condition classes less than fair, management will be designed to raise the condition class one-third every 6-8 years" (Plan 4-45). What does this standard mean—that it would take 18 to 24 years to improve a full condition class? Is the desired condition of presently degraded riparian areas to be merely as good as their present degraded status?

Which riparian areas are in less than "good condition," and where are these areas located?

FOREST RESPONSE:

Riparian area forage utilization standards have been rewritten to better describe the Forest intent to promote riparian area recovery, and they can be found in the Range section of Chapter 4 of the Forest Plan and Appendix D of the FEIS.

Recovery objectives are based on riparian area classification and site potential rather than existing condition. The Forest Management Objective section for Riparian/Fish in Chapter 4 of the Forest Plan describe the following condition: Trends in improving vegetative, soil, and other conditions on Forest riparian areas will be continuing. Overall riparian condition will be as good as, or better than, present riparian status.

The majority of riparian areas in less than good condition can be found on the southern half of the Forest where precipitation is lower, temperatures are often higher, and the terrain is more gentle. All these factors combine to result in a trend toward increased livestock use within those riparian areas.

COMMENT NO 28: If existing degraded levels of riparian vegetation are not adequate to restrain sediment loading of channels, then maintaining present conditions will not be sufficient, nor will Best Management Practices (BMP's).

FOREST RESPONSE:

Spawning habitat quality and cobble embeddedness affecting juvenile rearing habitat are not major factors limiting fish production on the Forest. Although some areas are in need of improvement, existing levels of riparian vegetation are adequate to restrain sediment loading of channels, and therefore, it is not a major contributor to factors limiting fish production on the Forest either. Both conclusions are based on stream surveys, and other inventories, water quality monitoring, and the Forest fish biologist's experience. The Forest is interested in improving riparian area condition because of the many values and uses associated with the areas.

COMMENT NO. 29: On Forest Plan page 4-45, the standard for streambanks in Class I and II streams (11.C) reads: "streambanks should have 80 percent or more of their total lineal distance in a stable condition." It needs to be more specific. What condition is acceptable for the 20 percent? "Stable" needs to be defined.

FOREST RESPONSE:

The 80 percent requirement is the best professional judgment of Forest personnel for meeting state water quality requirements. It is written as a desired condition, and monitoring will determine if the desired level can be met. "Stable" implies a situation is not worsening; in this case, erosion is either not increasing or not occurring along 80 percent of the lineal distance. Essentially any condition is

acceptable along the remaining 20 percent of the distance so long as the remainder meets the 80 percent requirement (meaning that 100 percent of the distance meets state requirements)

FISH HABITAT

COMMENT NO. 30: On Forest Plan page 3-8, the paragraph beginning "on the remaining Forest riparian areas" needs to be clarified It seems to imply that there is fish habitat in Class IV streams, and that some of the Class I streams being considered dry up every year in July and August.

FOREST RESPONSE:

Many Class IV streams do have fish habitat values It is possible for an important steelhead spawning stream that is heavily used in the spring to dry up in late summer. Class I streams are perennial, but perennial streams could be dry in late summer under severe or extended drought conditions. The Forest is unaware of any stream designated Class I that dries up every summer.

COMMENT NO. 31: Using the Timber Sale Program as a basis for coordination may explain the statement made in the Plan concerning "coordinating management activities in and near streams," but the Timber Sale Program is an inappropriate basis for coordinating management of fish habitat.

COMMENT NO 32: "Successful implementation of the Forest Plan requires, and is dependent on a high level of internal resource coordination. The Timber Sale Program provides the major vehicle through which coordination will be accomplished (Plan 4-30)." What is the magnitude of "a high level"?

FOREST RESPONSE:

The fisheries program is the principal way in which the Forest coordinates fisheries management However, implementation of most Forest projects requires an interdisciplinary approach due to the interrelationships and potential effects of resource management activities Interdisciplinary teams (IDT's) typically include participation from a fish or wildlife biologist and a range of other resource management specialists To insure that the intent of the Forest Plan is met, the sale program and individual projects are designed, developed, completed, and monitored through the IDT process. The timber sale and associated road construction programs are two of the principle activities on the Forest with potential for adverse impacts on other resources Fisheries involvement during the IDT project planning process, (including that for all timber sales) is essential in order to meet all riparian, water, and fisheries resource goals and objectives for proposed projects Therefore, the timber program is one basis for coordinating management of fish habitat, and a "high degree" of coordination is needed.

COMMENT NO. 33: Forest-wide Standards and Guidelines Goal 4 seeks to "provide and maintain a diverse, well-distributed pattern of habitats for viable populations of fish in cooperation with state and other agencies. The goal applies to all areas dominated by riparian vegetation, including areas containing anadromous and resident fish habitat, perennial and intermittent stream courses, wetlands, and floodplains." None of the management area directions protects Class IV streams, and the Forest-wide Standards and Guidelines are inadequate to do so.

FOREST RESPONSE:

The Forest-wide Standards and Guidelines for Class IV streams have been strengthened regarding water quality, inchannel large woody material, stream bank stability, and the predesignation of skid trail crossings The Range section details allowable forage utilization levels for all areas, including riparian areas. The Forest-wide Standards and Guidelines and Management Area directions are found in Chapter 4 of the Forest Plan and Appendix D of the FEIS and are adequate protection to meet fish resource goals and objectives.

COMMENT NO. 34: The Umatilla National Forest assumes that the Forest-wide Standards and Guidelines are sufficient to maintain fish habitat. DEIS Table IV-23 shows that the long-term contribution of riparian management to fish production under the Forest-wide Standards and Guidelines is minimal. In Table IV-23,

"Alternative **A** shows no increase in smolt production as a result of riparian protection and management because habitat protection occurs under Forest-wide Standards and Guidelines for the Alternative" (DEIS IV-82).

FOREST RESPONSE:

*Under Alternative **A**, all stream and riparian areas are managed at the management requirement level. All other alternatives use combinations of C5, C6, or other stream protective management areas for an additional level of riparian protection. The Forest-wide Standards and Guidelines found in Appendix D of the FEIS and Chapter 4 of the Forest Plan are based on laws, regulations, management requirements, and other direction. Management requirements for riparian areas were to use practices that would not result in detrimental changes to water condition or fish habitat; therefore, the Forest-wide Standards and Guidelines in the draft Plan were expected to maintain fish habitat and fish production potential.*

*The majority of increase in smolt production due to improved fish habitat capability is expected to come from fish habitat enhancement for most alternatives. Part of the effectiveness of the habitat enhancement projects comes from riparian area management and improvement at the project site. Habitat restoration projects must go hand-in-hand with riparian area improvement for maximum increase in smolt production. Since riparian conditions are only maintained in Alternative **A**, no increase in smolt habitat capability was estimated from riparian management; all increases are due to fish habitat improvements.*

COMMENT NO. 35 What criteria does the Forest use in its designations? Are Class I streams those having "significant" as opposed to "moderate" population levels of anadromous fish?

FOREST RESPONSE:

Class I streams are defined in the glossaries of the Forest Plan and FEIS as perennial streams or segments thereof which are used by anadromous and resident fish (usually perennia). There is no reference to population levels.

COMMENT NO. 36: The Umatilla National Forest prediction that in 10 years the high priority habitat will be enhanced indicates that the Forest has inventoried and classified the habitat. This information must be made available to the public. If these inventories will be the basis for rehabilitation and enhancement, how can the public know that important on-Forest habitat will be enhanced? Without this information it is impossible to make predictions on the effects of the Forest's proposed level of development on water quality and fish habitat. The lack of inventories on the upper watersheds and on each stream reach result in the failure of ability to analyze the contribution of the upper stream reaches to downstream water quality.

FOREST RESPONSE:

Previously completed stream surveys collected information on riparian area width, plant composition, ground cover, overhanging vegetation, and streambank stability. Our ranking by priority of streams for habitat enhancement is largely based on those surveys. They are on file in the Supervisor's Office of the Umatilla National Forest, and available for public review.

COMMENT NO. 37: Long-term improvements in fish populations are also dependent on riparian management (DEIS IV-78). Do these projections assume full compliance with all timber sale contract conditions and grazing allotment plan provisions which affect fish? How is implementation assured?

FOREST RESPONSE:

The fish production projections made on DEIS page IV-78 did assume implementation of proposed standards and guidelines including Best Management Practices (BMP's) as detailed in Appendices D and E of the FEIS. Chapter 5 of the Forest Plan discusses the implementation process and monitoring requirements. As part of the implementation-monitoring process, methods for clarifying or adjusting requirements and/or practices are described if they become necessary.

Upon implementation of the Plan, all contracts, permits, and other implementation instruments will fall within the scope and provisions of the Forest Plan. Adherence to the clauses set forth in timber sale

contracts and livestock grazing permits is required as a part of the approval and issuance of the documents.

Administrative reviews (field checks, inspections, formal reviews, and monitoring) are used to test contracts, permits, and other implementation for results Reviews may show a need for changes to meet goals, appropriate changes can be made by following the process.

STREAM SHADING

COMMENT NO. 38: There is a contradiction in standards for shading. Class III streams are listed as requiring 75 percent of inherent capability of the riparian area to produce shade (Plan 4-45) and also "an average of 80 percent of the stream surface" (Plan 4-98). The determination of inherent capability is all-important. Taking the inherent capability as the present condition is certainly incorrect and dangerous because the present condition in many instances is far below average.

FOREST RESPONSE:

No contradictions exist. The 75 percent shading level is the management requirement (MR), based on state requirements on riparian areas and is used in the draft standards and guidelines. The standard applies whenever no specific riparian strategy is applied to Class I through Class III streams. Such areas include A1, A2, A8, C8, F4, and others without scheduled timber harvest The 80 percent shading level is used in Management Areas C5 and C6 and applies whenever the strategies are applied on the Forest. Each shading standard is based on site potential to produce shade.

For the final Plan, stream shading standards and guidelines have been rewritten to improve understanding and ease of application without changing the intent of providing sufficient stream surface shade to meet aquatic resource objectives The new objectives can be found in Chapter 4 of the Forest Plan and Appendix D of the FEIS and are tied to riparian area classification and site potential.

COMMENT NO. 39: What percent shading by watershed is found throughout the Forest? What presently is the degree of stream shading on the Umatilla National Forest previously unmanaged stands?

COMMENT NO. 40: What has the percentage loss in shade been in riparian zones on Class I, II, and III streams, and Forest-wide?

FOREST RESPONSE:

Stream surface shade is highly variable even for unmanaged stands A few variables, other than tree canopy, affecting stream surface shade at a given site are stream directional orientation, topography, channel morphology, and site productivity. To generalize about the degree of stream surface shade on Forest riparian stands is not possible, but using the information from a given site can be useful in estimating site potential at another similar site.

Percent stream surface shade objectives are applied on a site-specific basis Percent of stream surface shade can also be meaningful when expressed as an average for a stream reach. It would be inappropriate to expand that information to an average by watershed.

Information on percent shade loss from management activities is available only for specific projects where stream shade was identified as a concern and project level monitoring was used to determine project effectiveness The question of Forest-wide shade loss can better be answered after the riparian area classification is completed and site potential can be estimated. The schedule for completion of the inventory is given in Plan Appendix A.

COMMENT NO. 41: It is true that small streams are most susceptible to temperature changes caused by management activities (DEIS IV-12) The influence of these small streams on larger streams must also be considered.

FOREST RESPONSE:

The influence of small streams on large streams has been reflected in the Forest-wide Standards and Guidelines (in Appendix D of the FEIS and Chapter 4 of the Forest Plan), and is discussed in Chapter IV of the FEIS concerning environmental effects

COMMENT NO 42: There are major distinctions between 80 percent light attenuation over the entire stream surface, 80 percent crown cover in the riparian zone, and 80 percent canopy cover over the stream surface. The standard proposed is not very clear and consequently the method for determination of effectiveness is not apparent.

FOREST RESPONSE·

The standard requires stream surface shading at 80 percent of ecological potential. The standard has been revised to meet ecological potential where water temperatures fall below standards for given stream reaches The Monitoring section in Chapter 5 of the Forest Plan proposes to measure solar radiation to the stream surface using the solar path finder instrument.

RIPARIAN/WILDLIFE

COMMENT NO. 43: In the last paragraph on DEIS page IV-65, the terms "important hardwood habitat" and "significantly" should be clearly defined The final document should also state how the habitat will be protected and describe impacts if the habitat is not protected.

FOREST RESPONSE·

The section in Chapter IV of the FEIS has been rewritten to improve clarity of direction. Direction for riparian area management is found in the Riparian/Fish Habitat and Water sections of the Forest-wide Standards and Guidelines and in Management Area C5 in Appendix D of the FEIS and Chapter 4 of the Forest Plan. The direction is to identify ecological potential of a site in order to guide the application of management techniques to maintain or improve habitat and encourage riparian area recovery

COMMENT NO. 44: On DEIS page III-30 (management indicator species), we propose the designation and provision of management requirement (MR) standards and monitoring programs for a larger set of indicator species of the forest types collectively forming the riparian vegetation spectrum. Old growth/mature hardwood riparian forests might be represented by the wood duck or red-eyed vireo; the yellow warbler or yellow-breasted chat could be indicators of riparian willow thickets; the willow flycatcher for low, boggy, mixed-species openings; and the ruffed grouse for mixed-age or intermediate-age riparian forests.

FOREST RESPONSE:

The Forest debated the need for, and/or effectiveness of, a terrestrial management indicator species for riparian habitat Except for the wood duck, which does not occur on the Forest, each of the avian species suggested were carefully considered Some of the problems associated with the selection of any one of these species, however, are (1) Lack of clear and easy visibility, (2) occurrence in a wider range of communities than the narrow riparian habitat, and (3) naturally-occurring cyclic populations unassociated with management activities After careful analysis, the Forest concluded that no one or even two terrestrial species would serve as effective indicators of management in the riparian zones. As displayed in Chapter 5 of the Forest Plan, Forest monitoring activities will focus on habitat condition (cover, streamside vegetation, large woody material, forage and/or range condition, and water quality) rather than on a host of wildlife species

RIPARIAN/MONITORING

COMMENT NO. 45: In addition to utilizing a fish species as an indicator of riparian habitat condition, a direct measurement of the health and density of riparian plant communities should also be developed. In the Riparian Monitoring section on Forest Plan page 5-9, the unit of measure needs to include vegetation.

COMMENT NO. 46: Improvement of riparian areas also should be evaluated to assure that such improvements are accomplishing desired results.

COMMENT NO. 47. The Umatilla National Forest needs significant monitoring to demonstrate to the public that widespread, dramatic improvement in riparian condition is resulting from its range management. This must involve much more than utilization monitoring on selected sites.

FOREST RESPONSE:

The Monitoring section in Chapter 5 of the Forest Plan has been strengthened to respond to the concern by focusing on riparian plant community and vegetation monitoring. The Range subsection has also been clarified as to the methods and frequencies used to monitor levels of forage utilization and long-term improvement of key areas.

Riparian enhancement project monitoring supplements Forest Plan monitoring and is described during project planning One of the most important values of this type of monitoring is that feedback on success of techniques is used to improve project effectiveness. Riparian enhancement efforts are also monitored through timber sale and range allotment monitoring. Specific monitoring items and methods for each resource area are shown in Forest Plan Chapter 5.

COMMENT NO. 48: Has the Umatilla National Forest undertaken any studies to evaluate the effects of Best Management Practices? Are BMP's effective in protecting fish habitats?

FOREST RESPONSE:

Past project-level monitoring, administrative studies, and research suggest that Best Management Practices (BMP's) are effective in protecting water quality parameters of concern to fisheries management. A discussion of BMP's and their effectiveness is found in Chapter IV of the FEIS. A more detailed discussion of general BMP's and their effectiveness is found in Appendix E of the FEIS.

COMMENT NO. 49: Based on its research, and given the utilization standards listed, what rate of riparian recovery does the UNF predict will occur?

FOREST RESPONSE:

The rate of riparian area recovery cannot be accurately predicted at this time. The riparian area classification, which is scheduled to be completed within 3 years, would provide the basis for estimating recovery rates on a scale large enough to be extrapolated to the Forest-wide level. Conditions vary tremendously across the Forest – from the rock piles remaining after dredging operations to essentially undisturbed steep-sided valleys in the higher elevations. The rate of riparian recovery can, however, be predicted for specific sites.

COMMENT NO 50: Riparian areas should be well-monitored by the establishment of photo hubs and/or other techniques. Does the Umatilla National Forest have any sites targeted for studying the relationship between the rate of utilization of forage, vegetative condition, and the rate of riparian zone recovery under various intensities of grazing?

FOREST RESPONSE:

Yes Currently three riparian study exclosures are used to provide information on riparian recovery rate, forage utilization, and vegetative condition, and more are planned for the future. Many sites for further study will be identified through the riparian area classification study Also, 26 photo points are located

in riparian zones that are read at 2- or 3-year intervals. The photo points monitor forage utilization, vegetative condition, and riparian area recovery rate. Administrative enclosures spring source protection enclosures can also be used for information on riparian recovery rates

DOCUMENT CONTENT

COMMENT NO. 51: The average number of riparian acres harvested per decade is an incomplete indicator of riparian area quality

COMMENT NO. 52. Figure II-G on DEIS page II-108 is a bar chart of suitable riparian areas harvested by alternative. Since the text states that this reflects the intensity of activity in riparian areas, how should Figure II-G be interpreted in light of the differences between alternatives? Is the magnitude of differences that great?

FOREST RESPONSE:

In addressing the riparian issue and comparing alternatives, the Forest could have used several possible indicators of future riparian condition. The amount of activity in riparian areas was viewed by the interdisciplinary team (IDT) as an easily predictable (quantifiable) and relatively reliable indicator. Large amounts of activity were seen as meeting riparian objectives and as having the potential to be of high risk for potential problems; the opposite was also thought to be true. The IDT recognized that the amount of acres harvested is an incomplete measure of future riparian area quality. However, the IDT decided to use the average number of riparian acres harvested per decade as one indicator of the responsiveness of alternatives to the riparian issue, and for a comparison of the alternatives in resolving the issue. The smolt habitat capability index (SHCI) was also used as an indicator of riparian condition.

The range of difference of riparian harvest among alternatives is from an average of over 3,500 acres per decade to an average of less than 500 acres per decade This seven-fold difference is a large range of activity levels for a sensitive and important area

COMMENT NO. 53: Are riparian constraints consistent with state riparian law?

FOREST RESPONSE:

Yes One of the goals of the Best Management Practices and the Forest-wide Standards and Guidelines is to meet Federal and state (both Oregon and Washington) water quality standards. State practices were, in fact, used to help design the Forest-wide Standards and Guidelines

COMMENT NO. 54: Your description of riparian zones omits the chief function of producing a sustained quantity of clean water (DEIS III-24).

FOREST RESPONSE:

Producing a sustained quantity of clean water is one of the fundamental management goals on National Forest System lands; the Forest has clarified the wording in Chapter III of the FEIS.

COMMENT NO. 55: On page 4-45, Class III streams are perennial and care must be taken during all seasons to protect downstream values. #10A – Excellent. #10B – Excellent. #10C – Vegetation which protects the streambanks from erosion shall be retained. As a stream rehabilitation factor, vegetation is a valuable enhancement tool for: (1) Reducing water temperature, (2) streamside stability, (3) forage for aquatic and terrestrial insect life, and (4) forage for wildlife. Therefore, retention is insufficient as a gauge. Vegetation should be improved.

FOREST RESPONSE:

The portion of the Forest-wide Standards and Guidelines in Chapter 4 of the Forest Plan referring to retention of stream-adjacent vegetation has been rewritten to emphasize improvement to site potential.

COMMENT NO. 56: The liberal use of "will" and "shall" in the Riparian/Fish Habitat, and Water and Soil Standards and Guidelines is commendable. We support their retention in the final Plan.

FOREST RESPONSE:

The use of will and shall is inherent in the intent of a Standard. These have been retained in the Plan.

COMMENT NO. 57: Total riparian regeneration harvest by year (DEIS Table IV-22) should include a line stating: "Smolt Habitat Capability Index increases from improvement projects."

FOREST RESPONSE:

Smolt Habitat Capability Index (SCHI) is used as an indicator of the response of the various alternatives to the public issues. Smolt production is another indicator and is broken down for riparian management and fish habitat improvement in FEIS Figure IV-N The focus of FEIS Table IV-15 is strictly riparian. Adding smolt habitat capability increases from fish habitat enhancement projects would probably be confusing.

FISH POLICY AND MANAGEMENT

COMMENT NO. 1: The goal of providing habitats for "viable populations of fish in cooperation with states and other agencies," (Plan 4-44) is a very incomplete goal statement. There is no evidence that viable populations and appropriate distributions of anadromous fish have been identified, nor that the means to monitor population trends and the effects of habitat changes have been determined.

FOREST RESPONSE:

The Forest considers all fish populations on the Umatilla National Forest to be viable at this time, but recognizes they are vulnerable to both downstream and upper watershed impacts, as discussed in Appendix M of the FEIS. A fish distribution map is on file in the Umatilla National Forest Supervisor's Office This information is currently being updated through a physical stream survey analysis, and continued stream survey is planned as shown in Appendix A of the Forest Plan Additional information on fish distribution and viable fish populations will be gleaned from Forest Plan monitoring results The Forest will also be using annual redd-count data collected by state fish and wildlife agencies as a means to monitor population trends, as discussed in Chapter 5 of the Forest Plan. The Forest will be providing fish habitat at a much higher level than that required to maintain viable populations.

COMMENT NO. 2. There is no evidence that the Forest has taken into account high priority critical fishery watersheds as suggested by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) in comments submitted to the Forest in July 1985.

FOREST RESPONSE:

An interdisciplinary team from the CTUIR met with planners from the Umatilla National Forest and other adjacent forests in 1985. On July 3, 1985, the Tribal Board of Trustees approved a document outlining tribal recommendations, entitled "Recommendations for National Forest Plans for areas of the Umatilla, Wallowa-Whitman, and Malheur National Forests within the Ceded Boundaries of the Confederated Tribes of the Umatilla Indian Reservation." The watersheds identified as critical importance to tribal fisheries were: The unroaded areas surrounding the headwaters of the Umatilla River; the watershed for the Lookingglass Fish Hatchery, the North Fork John Day River and its tributaries; the portions of the Tucannon River Basin on Forest Service land; the upper mainstream and tributaries of the Grande Ronde River; and the Grande Ronde River downstream from Rondowa. In addition, all streams producing spring Chinook and steelhead, and all streams selected for habitat enhancement should be regarded as high priority critical watersheds

Management recommendations were as follows:

1. *In all streams that produce both spring Chinook and steelhead, habitat protection and enhancement should be practiced to achieve full potential Smolt Habitat Capability Index (SHCI)*

2. *Management to enhance and protect natural fish habitat should have top priority*

3. *Enhancement and restoration measures are appropriate for use in degraded habitat.*

    a. *Include habitat for all life stages, including adult passage, adult holding pools, spawning beds, and juvenile rearing.*

    b. *Continue standard habitat improvement practices, and support investigation and evaluation of innovative practices.*

In addition recommendations were made for riparian area management, watershed and groundwater management, and others.

The critical watershed concerns and management recommendations were taken into account during the development of the Forest Plan. In fact, the draft Plan reflected an emphasis on fisheries and

watershed management; the final Plan is even stronger For example, the final Plan includes a number of management areas specifically designed for (or with) a high degree of protection for fisheries. C7 in the North Fork John Day system, C8 for portions of the Umatilla and Tucannon watersheds, A2 in parts of Lookingglass Creek, A7 along the Grande Ronde and other rivers, numerous management areas precluding timber harvest and roading (A1, A2, A8, B1 and F4), and a revised C5 strategy emphasizing riparian values. The Forest-wide Standards and Guidelines have been strengthened (FEIS Appendix D), Best Management Practices clarified (FEIS Appendix E), and monitoring plan revised (FP Chapter 5) Further evidence of this attention is the highest level of fish habitat enhancement associated with a high degree of fisheries resource protection in the final Forest Plan.

COMMENT NO. 3: There is no indication of action plans for situations where the SHCI is not being met. What would the plans be to correct these situations, who will take responsibility, and who will implement?

FOREST RESPONSE:

The process for implementation and monitoring of the Forest Plan is outlined in Chapter 5 of the Forest Plan. Essentially, the programs and projects will be implemented by Forest managers according to direction in the Forest Plan; monitoring will assess the results If analysis shows that results meet desired objectives, no changes should be anticipated; if results fall outside of desired outcomes, the Forest Plan may be amended, revised, or other management actions may be taken. The Forest manager's response should be to follow the process, and it would be the same no matter which goal or objective Forest Plan monitoring suggests may be a problem. The process is continuous and interactive Appropriate changes in management activities would result; additional monitoring would be used to determine the effectiveness of the activity changes.

COMMENT NO. 4: The Forest Service has informed Columbia River Inter-Tribal Fish Commission (CRITFC) and tribal staff that the Forest Service is only responsible for supplying smolt habitat capability and that there is far more capable habitat than there are smolts. We feel that the Forest Service responsibilities include more than merely furnishing a given amount of habitat

COMMENT NO. 5: In keeping with the Power Planning Council's goal, the Bonneville Power Administration spends many thousands of dollars annually on the Forest to construct hundreds of instream structures for fish habitat improvement. Maintenance and enhancement of these fisheries must be a central focus of the Umatilla Forest Plan. All facets of management should be systematically examined. Anadromous fish resources should be given special recognition in the Forest Plan

COMMENT NO. 6: The anadromous fish runs can only be restored if state, Federal, and Tribal land, water, and wildlife managers adopt a coordinated "gravel to gravel" management approach to this valuable and renewable resource. The FEIS should reflect this approach.

FOREST RESPONSE:

As recognized in Chapter III of the FEIS, the survival and enhancement of anadromous fish runs within the Columbia River and its tributaries requires coordination of, and cooperation, by state, Federal, and Tribal agencies and managers. While a primary responsibility of National Forest management is to furnish habitat, the Forest will go beyond this by working cooperatively with Tribal, state, and Federal fisheries personnel to achieve all parties' objectives, thus resulting in stronger fish runs in the Columbia River Basin.

The Forest shares the concerns of the Tribes, Northwest Power Planning Council, and others for comprehensive management emphasizing protection and management of fish and riparian resources.

The entire Forest planning effort has been designed to enhance fisheries, including the development and application of appropriate standards and guidelines, management areas, alternatives, best management practices, mitigation and enhancement proposals. The Plan has had intensive public review by all parties interested in the fisheries resource

As the Plan is implemented, the individual projects will be closely coordinated with tribes and others. The Forest expects to continue investing appropriated and cooperative funds to enhance fish habitat and provide support for meeting the above goals. As stated in Chapter 5 of the Forest Plan, population

trends of salmon and steelhead will be monitored cooperatively with the Oregon Department of Fish and Wildlife and the Tribes. Monitoring will also be done to gauge conformance with standards and guidelines and Best Management Practices. Since all parties are interested in the efficient utilization of habitat, the Forest will certainly share information and coordinate with others in identifying opportunities to best meet fisheries production objectives.

COMMENT NO. 7: Plan at 4-50. The riparian/fish habitat standards say nothing about instream habitat quality. Parameters of fish habitat include water quality, shade, condition of spawning and rearing areas, amount of large organic debris, macroinvertebrate populations, pool/riffle ratios, cobble embeddedness, etc. The lack of standards relating to instream habitat quality is a serious flaw.

FOREST RESPONSE:

The Forest-wide Standards and Guidelines were written to provide land management direction for the Forest and assist in formulating the Forest planning model and alternatives. The standards and guidelines were written to describe the necessary activities and constraints to achieve the desired future conditions. The Forest has continued developing and improving standards for instream habitat quality for many of the parameters listed. At present, information is lacking to set standards for many parameters, especially in light of the natural variability on the Forest and the sampling variability of for parameters such as cobble embeddedness. Therefore, this undoubtedly will be an ongoing process of development and refinement of the Forest Plan.

COMMENT NO. 8: It should be Forest Service policy not to introduce fish to lakes or ponds in which they have not occurred naturally in the past.

FOREST RESPONSE:

Forest Service policy is to reach joint agreement with the appropriate fish and wildlife agencies on proposals for stocking or introduction of fish and wildlife on National Forest System lands. Stocking is done primarily to supplement existing population or to re-establish populations where they formerly occurred.

FISH INDICATOR SPECIES

COMMENT NO. 9: (See Forest Plan, p. 4-44.) The Forest proposes to use steelhead trout and rainbow trout as the indicator species for both riparian habitat and aquatic habitat. Rainbow trout are good indicators of the anticipated changes to stream rearing habitat capacity, but are not the most sensitive indicators of sediment yield, water temperature, and spawning habitat. The riparian and aquatic habitat indicator species must be the species most sensitive to changes of water temperatures and sediment yield. Chinook salmon juveniles, because of their higher level of sensitivity, should be utilized as aquatic indicator species where they exist. When Chinook salmon are not present, the bull trout should be preferred over the rainbow trout as an indicator species. The rainbow trout should be third choice.

FOREST RESPONSE:

The Forest proposes to use steelhead trout and rainbow trout as management indicator species even though they are not the most sensitive species to sediment and water temperature parameters, as discussed in FEIS Appendix M and Chapter 5 of the Plan. Both are good indicators of aquatic and riparian habitat quality and are found in all of the habitats of interest on the Forest In Chapter 5 of the Plan, juvenile Chinook salmon population monitoring was considered but not selected because of natural population variability and the expense of monitoring. Water temperature and sediment habitat parameters could be better characterized by looking at direct measurement of water temperature and by macroinvertebrate monitoring for (sediment effects on stream substrate).

FISH NUMBERS/OUTPUTS

COMMENT NO. 10: Alternative **E** has higher anadromous fish production from riparian areas, and less sediment and less logging, but ends up with fewer fish.

FOREST RESPONSE:

*Alternative **E** had lower levels of fish production projected because increased riparian protection and less timber harvest in riparian areas was used in lieu of higher investments. The extra smolts projected from the high level of investment in fish habitat enhancement in Alternative **F** makes the difference between the two alternatives in estimated fish production. Alternative **F** had the highest level of fish habitat enhancement and Alternative **E** had the lowest level.*

COMMENT NO. 11: While much information has been supplied on fish populations, little seems to be available to indicate that these populations are in any demand by sports or commercial fishermen. This neglect has diminished the need for stable fish populations to meet the demand, a demand that provides very real economic gains to the communities surrounding the Forest and impacts the salmon industry.

FOREST RESPONSE:

The sports and commercial fishing demand was recognized in our planning process. In FEIS Chapter III and Chapter 2 of the Plan, in the Riparian/Fish section, it was pointed out that the majority of anadromous fish harvest occurs downstream from the Forest or in the ocean The Forest recognizes that the demand for salmon products has been high for some time, and prices have risen steadily, with an almost fourfold increase between 1967 and 1976. And demands for anadromous fish are expected to continue to exceed availability. It was recognized that any extra harvestable fish produced over escapement needs could be utilized by commercial, Indian, and sports fishermen. Strong pressure to expand salmon stocks is expected to continue into the foreseeable future. The demand for sport fishing for both anadromous and resident fish is expected to increase by one-third between 1980 and 2000. By 2030, demand for sport fishing is expected to have increased by at least 90 percent Benefits of both sports and commercial fisheries have been estimated and are summarized in Table II-34. The process for developing the benefits estimate is described in Appendix B

COMMENT NO. 12 The Umatilla EIS is generally a very comprehensive report and covers most issues of controversy but needs the following: Evaluation of commercial fish catch compared to other Forest uses.

FOREST RESPONSE·

Commercial fisheries catch was evaluated as compared to other Forest uses in Chapters III and IV of the FEIS. Also refer to Table II-34 ("Present Net Value and Discounted Benefits and Costs by Resource Groups") for a display of commercial fish value. All alternatives proposed to increase the potential number of anadromous fish produced on the Forest. The Forest was recognized as having a small but important share of the Columbia River Basin anadromous fish. During the next decade, the increase in anadromous fish production will support traditional uses and customs of the Indian community, commercial fishing lifestyles, and current recreational patterns.

COMMENT NO. 13: Umatilla Forest fisheries habitats produce an estimated 4 percent of spring Chinook salmon and 7 percent of steelhead runs returning to the Columbia River system. Increasing numbers of headwater impoundments will help increase the numbers of other cold water species utilizing a greater percentage of the Forests potential as a fisheries habitat.

FOREST RESPONSE:

While the Forest Plan does not propose headwater impoundments at this time, this is a potential fish habitat enhancement project idea that could be considered. Generally the Forest Service does not initiate proposals for large scale water storage facilities on Forest lands A brief description of Forest Service policy regarding out-service proposals for water storage facilities can be found in the Water section of FEIS Chapter III.

COMMENT NO. 14: There is a major discrepancy in the Forest's predictions of future increases in fish habitat capability. Page 2-14 of the Plan predicts a 58 percent increase in present habitat capability for anadromous fish under current direction; page III-35 of the DEIS predicts a 150 percent increase under current direction; and page 3-13 of the Plan predicts an estimated increase of 92 percent in anadromous fish production. Which figure is correct? Statements indicate that the Forest's streams produce 1.7 million anadromous smolts annually. However, Table 2-1 shows a SHCI of 1.48 million smolts. This could mean there is a 13 percent discrepancy in the figure the Forest used to calculate future increases in the SHCI.

FOREST RESPONSE:

There was a discrepancy in the way future increases in fish habitat capacity were reported A 58 percent increase in present habitat capability was estimated using fish production figures from benchmark 5. Using 1980 base level figures for fish production we find a 55 percent increase in present habitat capability under current direction. The 55 percent figure is a better estimate of this The estimate on page III-35 of the DEIS was a typographical error. The sentence should have read, "..expected to increase present habitat capability for anadromous fish to 150 percent.." rather than by 150 percent. The estimated increase of 92 percent in anadromous fish production is accurate and relates to fish numbers rather than habitat capability. The figure of 1.48 million smolts is the 1980 base level smolt habitat capability index figure, although in some cases it was rounded to the 1980 base level of 1.5 million. The 1.7 million figure was not used as base level in any calculations All changes have been made in the final documents.

COMMENT NO. 15: (See DEIS p IV-78.) Fifth decade fish production is projected in Figures IV-N and IV-O. Figure IV-O (anadromous) differentiates between increases due to both riparian management and fish habitat improvement. Figure IV-N (resident) should differentiate as well. Both figures need to indicate maximum potential fish production.

FOREST RESPONSE:

Fish production tables and figures in Chapters II and IV were not revised from the DEIS. The smolt habitat capability index and resident trout habitat capability index models do not model riparian management parameters The "riparian smolts/improvement smolts" designations made in Figure IV-N were done outside the smolt habitat capability model, and were based on a rough estimate of effects from riparian management using the riparian harvest acres proposed for each alternative. The purpose of the figures was to display differences among alternatives using index numbers. The estimates do reflect maximum potential anadromous fish production in Figure IV-N.

COMMENT NO. 16: (See DEIS p. IV-76.) The text explains the water and riparian conditions which can affect fish. The FEIS should explain whether there is a limiting factor for fish (e g., temperature, sediment, stream structure, etc.) on the Umatilla National Forest. If there is, how are the standards and guidelines, priorities for inventories and baseline data collection, and monitoring program designed to take this into account?

FOREST RESPONSE:

The limiting factors for fish production in forest streams vary depending on the conditions encountered in different streams and even different stream reaches. Based on experience and observations of local fish biologists, and on results of recent stream surveys, the primary limiting factors encountered on the Umatilla National Forest are thought to be:

a. High summer water temperature,
b. lack of sufficient stream structure leading to poor quality summer and winter rearing habitat, and
c. insufficient stream flow during summer low flow periods

All anadromous streams on the Forest are limited to some extent by fish passage problems created by dams below the national forest Effects of sediment on fish habitat conditions are considered to be much less important than the above mentioned factors in most Forest streams See FEIS Chapter III for further discussion of limiting factors

The Plan contains strict Forest-wide and management area standards for maintaining or improving water quality, quantity, stream surface shading, and directions for resolving limiting factors problems

identified by fish biologists. The standards are shown in the Fish/Riparian and Water sections of Chapter 4 of the Plan and Appendix D of the FEIS. Riparian and instream enhancement projects are designed to improve the stream habitat conditions outlined above. An intensive physical stream Survey of fish habitat in Forest streams scheduled for habitat improvement projects was initiated in 1988 and will continue on many streams on the Forest. An integrated Riparian Inventory is scheduled for implementation in 1989. See Appendix A of the Plan for details on both inventories. The monitoring plan outline in Chapter 5 of the Plan has been revised to provide more detail on planned monitoring for water quality, riparian condition, and instream fish habitat parameters including those potentially influenced by sedimentation effects. These activities should allow us to confirm initial observations, to provide considerably more site specific baseline information on the limiting factors, and to track changes in conditions over time.

FISH HABITAT/CAPABILITY INDEX

COMMENT NO. 17: Trends would be established by "comparing selected parameters used to estimate RTHCI and SHCI from past surveys." What parameters does this include?

FOREST RESPONSE:

Procedures for calculating smolt habitat capability index (SHCI) numbers and resident trout habitat capability index (RTHCI) numbers are on file as planning process papers The calculations of the SHCI for the Forest are based upon the amount of juvenile anadromous fish rearing area. This includes estimates of current fish production, and assumptions and calculations for estimating the maximum potential fish production on the Forest. Coefficients are used for estimating eggs per spawning female, egg to smolt survival, current adult escapement, and potential escapement. Potential escapement with full habitat improvement was calculated by multiplying potential escapement by the percent of achievable pool and dividing by the percent of present pool RTHCI was calculated by determining the total number of acres of resident fish bearing lakes and streams and multiplying by 340 fish per acre Changes in resident fish habitat quality can be used to project the total potential habitat capability through time

FISH HABITAT ENHANCEMENT PROJECTS

COMMENT NO. 18: The planning model assumes that stream structures can increase the "capability" of the rearing habitats for salmon, steelhead trout, and resident trout thereby increasing production. However, there is no verified evidence and no scientific consensus that structural habitat improvement will increase salmon and steelhead production on the Umatilla National Forest. Further research and monitoring are clearly required.

FOREST RESPONSE:

Initial research and program evaluation and fish biologist experience indicates that fish improvement projects are one of the important tools for increasing fish production See discussion in the Fish section of FEIS, Chapter III Admittedly, a degree of scientific uncertainty exists about the total effect due to the complexity of the total fisheries picture. A major concern is how much increase in fish production will be achieved from fish improvement projects. Structural fish habitat improvement effectiveness has been identified as a research need Fish production monitoring is included in the Forest Plan, Chapter 5.

COMMENT NO. 19: "Enhancement and restoration will be practiced to produce anadromous fish habitat at 90 percent of the potential smolt habitat capability index (SHCI)." This will come about through procedures such as bank riprapping, digging of pools, and creation of spawning beds. Riprapping should be a last resort, even in urban areas The criteria identifying 90 percent potential are nebulous and do not appear to involve general watershed maintenance. Engineering solutions cannot be used as premitigation for planned logging and grazing programs. Although they may help within an overall plan, they cannot be the centerpiece of anadromous fish management. The Forest needs to identify and define "improvement techniques" because the Forest attributes the increases in SHCI to fisheries habitat enhancement projects, and not to riparian area management (see Plan p. 2-14), and because the SHCI does not correlate to many of the elements of riparian area quality.

COMMENT NO. 20: The Umatilla National Forest appears to be placing greatest emphasis on channel engineering solutions to riparian restoration as opposed to watershed and riparian restoration methods. It appears from Table IV-23 that the proposed increases in fish production are almost exclusively dependent on the level of fish enhancement. It is obvious that the Forest Service does not realize that management of fish habitat means more than placement of instream structures. The extreme disparity between the increases in fish production attributed to riparian protection and improvement and those attributed to enhancement must be explained.

FOREST RESPONSE:

The Forest is committed to helping to increase fish runs in the Columbia River Basin. To accomplish the goal, both fish habitat enhancement and riparian management practices are important and used to increase fish production. Proposed fish habitat improvement techniques are designed to improve fish habitat condition for those habitat parameters considered to be limiting fish populations. FEIS Chapter III contains discussion of the limiting factors. Habitat enhancement efforts are much more effective when combined with riparian area recovery, as pointed out in Chapter IV of the FEIS Goals could not be met by taking either approach exclusively. Both habitat enhancement and riparian area recovery are part of our total enhancement program and are at the heart of long-term goals for increasing fish production.

Fish habitat improvements involve both instream and riparian techniques. Log and rock weirs are designed to increase high quality pool habitat for improved winter and summer rearing habitat and are often the only areas holding fish in dry stream reaches during drought conditions. Placement of large woody debris increases stream channel complexity, which improves both summer and winter rearing habitat quality. Boulder placement is also effective in creating pocket pools for summer and winter rearing habitat. Riparian area plantings have been successful in speeding riparian area recovery and increasing stream surface shade.

COMMENT NO. 21 (See Plan p. 4-107.) The terminology "fish habitat improvement and maintenance projects are permitted," in the timber and forage management area, is unclear. Why would habitat improvement not be permitted?

FOREST RESPONSE:

The direction referred to was included in the Fish portion of the E1 Timber and Forage Management Area in Chapter 4 of the Forest Plan and Appendix D of the FEIS to draw attention to fish habitat improvement opportunities in these areas and to provide emphasis for the fish habitat enhancement program.

COMMENT NO. 22: (See DEIS p. IV-76.) What kind of monitoring has the Umatilla National Forest conducted on habitat improvement projects? What is the failure rate for habitat improvement projects, especially those that are designed to increase stream structure? What is the efficiency for those that succeed? Is the failure rate factored into calculations for beneficial effects? The research cited for habitat improvement effects (Stuber 1985) involved streams that did not contain anadromous fish. We do not believe this study is applicable across-the board to conditions on the Umatilla National Forest.

FOREST RESPONSE:

The Forest has been very successful at building structures that meet design expectations and perform well over time. Extensive physical fish habitat structure monitoring has been conducted on projects completed on the Forest within the last 10 years. The Forest has experienced a failure rate of less than 5 percent. A structure was counted a failure if it did not meet project objectives even when intact. Most of the structures counted as failures were still partially functional and were able to be repaired. Our small failure rate was considered in the calculations for beneficial effects but had a negligible effect.

The Umatilla National Forest has done a limited amount of fish population estimation at a variety of habitat enhancement project types to estimate benefits for each project type Most recently the Forest has been estimating benefits as a 100 percent increase of current capacity based on habitat evaluation studies in the John Day River (Claire and Storch 1977; Olsen and others 1984; Olsen and Lindsay 1984; refer to the References section of the FEIS for complete titles). The fish habitat improvement discussion in Chapter IV of the FEIS is rewritten using local references as well as Stuber 1985.

MONITORING

COMMENT NO. 23: A 7-day average temperature criterion is not useful for protecting fish. Fish can be killed by high peak temperatures as well as sustained temperatures.

FOREST RESPONSE:

The Forest recognizes that fish can be killed by high peak temperatures as well as sustained high temperatures. Monitoring water temperatures has and will continue to be done at many Forest locations using continuously recording thermographs from which both daily temperature fluctuations and extended period averages can be plotted The 7-day average is a good indicator of stresses the fish face during summer low flow conditions but was intended to be reported and monitored in addition to daily peak temperatures. Past monitoring activities are described in the Water section of FEIS, Chapter III; future water monitoring is described in Chapter 5 of the Forest Plan.

COMMENT NO. 24: Commencing an aquatic insect community composition and biomass sampling procedure is a very meritorious undertaking and should improve the understanding of the relationship between forest management and the aquatic resource base. However, it would be most instructive to report insect community dynamics in terms of species identified rather than reducing all data to a biotic condition index. Single indices, especially those based on taxonomic identification to varying degrees of specificity, may conceal important underlying community trends (Schindler 1988). Current costs of sample processing by the Forest Service are $40/sample. At this rate, given a program funded at $5700/year, 6 samples could be processed per stream for each semiannual insect collection This would amount to only 2 samples per riffle, 2 samples per run, and 2 per pool, for example. This is hardly enough to reliably judge trends. The costs of this sampling program do not even include costs of equipment and manpower for sample collection or report writing. Also, there is no possibility to sample upstream and downstream of stream impact zones.

FOREST RESPONSE:

The water and riparian resources monitoring plan in Chapter 5 of the draft Plan has been extensively revised. We have expanded the aquatic insect monitoring portion of the plan with increased sample amount and frequencies. Insect community dynamics will be reported in terms of species identified or Biotic Condition Index dependent on the monitoring objectives. We have established the cost of sample processing at $25 per sample through personal communication with Fred Mangum, Regional Aquatic Biologist, USDA, Intermountain Region.

COMMENT NO. 25: The Forest 10-Year Fish Habitat Improvement Plan predicts the construction of approximately 450 structures per year for 10 years, and identifies approximately $12,000 per year for evaluation and monitoring. Ten years from today, 4500 structures will have to be evaluated and monitored for the same amount. The funding for evaluation and monitoring should be directly proportional to the structural increase. In addition to this, the monitoring plan does not identify the evaluation and monitoring of habitat improvement projects, but only structural outputs.

FOREST RESPONSE:

An effective fish habitat improvement structure physical monitoring program can be conducted for $12,000 per year even though the number of structures will be increasing. As part of the monitoring plan in Chapter 5 of the Plan, the Forest does not expect to visit each structure every year. During years of low spring runoff, we would expect few structural failures and may only check new structures. Monitoring priorities will be established during construction by identifying as high priority those needing fine tuning or maintenance after high flows

FISH/RIPARIAN

COMMENT NO. 26: The text (DEIS p. III-34) states that riparian areas in the Forest total 70,743 acres of which 23,548 acres (33 percent) could support anadromous fish and 18,435 acres (26 percent) could support resident fish. How are the acres presented in Figure II-G distributed among these anadromous and resident fish riparian areas?

FOREST RESPONSE:

The FORPLAN model selects suitable riparian acres to harvest (as displayed in Chapter II of the FEIS in Figure II-H) without regard to location. However, all acres to be harvested are in the C5 Management Area. Riparian acres, for the purpose of the model were not split into the categories listed on page III-34 of the DEIS. The distribution of riparian harvest acres would be done by the interdisciplinary teams and line officers on each district of the Umatilla National Forest on a project basis.

COMMENT NO. 27. The text (Plan p. 4-99) in the riparian and wildlife management area (C5) explains that "a full range of silvicultural practices and intensities is permitted when compatible with water quality and anadromous fish and wildlife habitat objectives." How is compatibility determined and what level of risk to the resource is assumed?

FOREST RESPONSE:

The timber portion of the C5 Management Area has been rewritten to emphasize uneven-aged timber management strategies although even-aged management practices are still available Single tree selection is the preferred management tool within 50 feet of the stream channel Other silvicultural practices are also available for use in riparian areas such as site preparation, planting, and thinning. Constraints may be placed on yarding and skidding systems and post-harvest operations on a site-specific basis to protect riparian vegetation and habitat, and to preclude damage to soil and water resources. The cutting of dead and down material for fuelwood within riparian areas is discouraged.

The basic concept and management intent is to meet riparian, fish, and water quality objectives, which will influence compatibility of practices and potential for (risk of) problems The practices proposed are judged by the interdisciplinary planning team (IDT) as being compatible with riparian and related objectives, although different risks of impact may occur. An analysis of effects, such as described in FEIS Chapter IV, Riparian, provide additional information on potential impacts. Compatibility of timber harvest with anadromous fish, water quality, and wildlife objectives, and the level of risk to the resource, is determined during the site-specific, IDT project planning process as required by National Environmental Policy Act (NEPA) At that time, line officers decide the compatibility of practices and level of risk to assume with the selection of the project preferred alternative.

WATERSHED PARAMETERS

COMMENT NO. 28· The Forest's assumptions on sediment production are discussed later in our letter, but as mentioned, several streams on the Forest have degraded water quality, and any increases over background levels could impact fish habitat The Umatilla National Forest must supply a better explanation and rationale for its decision not to tie fish production to sediment yield. What is the current condition of spawning gravel in these systems?

COMMENT NO. 29. A number of sediment producing and related impacts can be extensive and long-term but no criteria are provided in the DEIS to address these specific impacts of sedimentation on fish habitat. Considering the losses of the salmon runs in the Umatilla and Walla Walla river basins, failure to reasonably and explicitly address these impacts basin-wide amounts to violation of National Forest Management Act (NFMA) and NEPA, in our view.

FOREST RESPONSE:

The Forest is unaware of any streams on the Umatilla National Forest with degraded water quality where any increase over background levels could impact fish habitat Sediment related fish habitat factors such as spawning habitat quality and juvenile rearing habitat quality associated with hiding in cobble substrate are not limiting factors None of the inventories or monitoring done to date has shown a problem with sediment. However, the tie between fish production and sediment yield is uncertain at this time. The correlation between fish production and sediment yield would be less than that found in the Idaho batholith. The Forest has estimated total production of sediment from proposed activities and their effects on water quality (FEIS Chapter IV, Water). While sediment yields is a possible area for future research, it is a low priority research topic on the Forest

COMMENT NO. 30: "Proper implementation of current best management practices (BMP's) will insure that fish habitat capability will not be degraded to a level significantly (What is significantly?) lower than existing habitat capability." The mere invocation of terms such as best management practices, standards and guidelines, streamcourse protection, erosion control, etc., without a specific identification of the mitigation measures involved, and evaluation of the effectiveness of these measures, is "insufficient to qualify as the reasoned discussion required by NEPA."

COMMENT NO. 31: Bland assurances that the Forest Service will implement mitigation measures which it alone determines are necessary frustrate the policies behind both NEPA and NFMA Both of these demand disclosure, public scrutiny, and public input. The Umatilla must discuss the effectiveness and uncertainties of its proposed mitigation techniques. Without this information it is impossible to make predictions on the effects of the Forest's proposed level of development on water quality and fish habitat.

FOREST RESPONSE:

The Forest approach to mitigation is described in FEIS Chapter II. Essentially, the Forest has taken the broadest view of mitigation and has incorporated it at each step in the planning process As noted in the chapter, mitigation measures (CFR 1508.20) (U.S Laws, Statutes, etc 1979) are applied to reduce or avoid adverse effects resulting from various management activities. Mitigation may take the following forms:

Preactivity· Avoid or minimize the impact
During activity. Reduce the impact.
Postactivity. Rectify or compensate for the impact.

The final Plan has built in (preactivity) mitigation measures, in varying degrees, through Forest-wide Standards and Guidelines, management requirements, management area direction, and the final Plan design including project proposals and the level of funding. Fish habitat protection and management has been stressed throughout the planning process As a result of public comment on the draft Plan, most of the elements have been revised and strengthened in the final Plan in regards to fish and riparian management

Most of the concern expressed in the comment appears to be related to site specific measures (during activity and postactivity mitigation). FEIS Chapter IV provides discussion of environmental consequences and specific identification of proposed mitigation measures including BMP's Additional discussion of BMP's appears in Appendix E. Each has had substantial revisions. Discussions of effectiveness of, and uncertainties about, mitigation including BMP's have also been expanded. Sufficient information is available to effectively assess the consequences of mitigation on fish and riparian resources on a Forest or basin level as shown in Chapter IV.

Most site-specific consequences will be addressed in subsequent project analysis and plans within the framework of the plan and in which the physical setting is known Additional mitigation measures will be provided through operating permits, plans, and contracts for these various projects. While it is true that application of the restrictions and constraints stated in the Forest-wide Standards and Guidelines will help insure fish habitat protection, no amount of written standards will replace careful planning, proper design, and close scrutiny of project activities Finally, activities and their effects including effectiveness of mitigation will be monitored, as shown in the Forest Plan.

Public comment is fundamental to the planning process and has occurred from the time of issue development to the recent period of final alternative development Throughout the process, opportunities were available for interested agencies, groups, and the general public to comment on the need and expected results of proposed mitigation measures. The public will continue to play a part in Forest planning as it proceeds and individual project design through the NEPA process. In addition, the Forest expects to have the public involved in monitoring activities

MITIGATION/FISHERIES

COMMENT NO. 32: Without a thorough discussion of Bonneville Power Administration (BPA) funding, the public may suspect that BPA dollars are being used to displace habitat protection activities for which the Forest Service is responsible. If habitat improvement projects are the primary reason for increases in fish production, and if 50 percent of the Forests funding for habitat projects comes from the BPA, it appears that the Forest is taking the credit for the effort funded by the regions ratepayers. It is illegal for the Forest Service to use ratepayer funds to subsidize mitigation measures for the Forest's timber program. The Umatilla must discuss the extent of its reliance on Northwest Power Planning Council (NPPC) enhancement programs in its projections for anadromous fisheries.

FOREST RESPONSE:

As shown throughout the Forest Plan, and indicated in other responses, the Forest is committed to the goal of increasing Columbia Basin fish runs. Within the Forest Plan are numerous positive management directions and planned activities to enhance riparian and instream conditions and meet desired goals. The proposed fish habitat enhancement program is not being used to displace habitat protection activities which can be found in C5 Management Area direction and in the Forest-wide Standards and Guidelines found in Chapter 4 of the Plan. The two programs must work together to be effective. Certainly, the fish habitat enhancement program is not proposed as a mitigation measure for the Forest timber program A completely different program (such as shown in Alternative I) would be initiated if the Forest's only concern was mitigation of impacts from developmental activities.

BPA has approved Fish Habitat Improvement Implementation Plans for work that is in progress in the North Fork John Day River and the Umatilla River sub-basins. The sub-basin planning process provides the basis for BPA project selection in the future The BPA is careful with the expenditures of ratepayers' funds and receives full credit for habitat enhancement work completed on the Forest Enhancement of the fisheries resource in the Columbia Basin requires "gravel to gravel" cooperation among many agencies and groups. Our association with the Northwest Power Planning Council and BPA is critical in meeting Forest Plan fish production goals on the Forest and downstream. We will be relying on funding from Congress to meet fish habitat enhancement needs and goals shown in the final Forest Plan.

COMMENT NO. 33 We have concern about the Umatilla's basic treatment of adverse fishery resource impacts. We request that the Forest treat fish production losses as a mitigation need requiring the firm, dependable funding that is fitting for a definable resource commitment.

FOREST RESPONSE:

Mitigation measures, as described in Chapter IV and Appendix E of the FEIS, that rehabilitate degraded stream channels, streambanks, floodplains, and riparian zones are used by land managers with a variety of funding sources including Knutson-Vandenberg funds for mitigation within timber sale areas, watershed restoration funds, and appropriated funds. Funding is contingent on budget requests approved by Congress, and therefore funding is as firm and dependable as Congress chooses.

CUMULATIVE EFFECTS

COMMENT NO. 34: Staff of the Columbia River Inter-Tribal Fish Commission, and the Tribes, have repeatedly requested that the cumulative impacts of Columbia Basin Forest Plans on anadromous fish be identified. To adequately assess the environmental impacts of its actions as required by NEPA, the Forest Service must study and disclose the cumulative impacts of all 17 Forest Plans being formulated in the region upon the Columbia River Treaty Tribes.

COMMENT NO. 35: Analysis and management should be done in conjunction with the Plans of adjacent forests sharing watersheds with the Umatilla National Forest so that cumulative impacts can be thoroughly evaluated.

FOREST RESPONSE:

In addition to cumulative effects discussions in Chapter IV of the FEIS, a published document in the Regional Office in Portland that aggregates the 19 draft Forest Plans, and is updated with the selection of each Final Plan The document is "Forest Plan Aggregate Outputs and Effects Staff Paper for the Regional Forester, Region 6" (Draft August 5, 1988). Much of this information has been provided to interested publics.

MINERALS

MINERALS ACCESS

COMMENT NO. 1: There are several inconsistencies in the DEIS mineral access restriction Tables II-8, II-26, and IV-24. Explanations should be provided where acreage figures vary by alternative.

FOREST RESPONSE:

The statements offered are valid, and revisions have been made in the FEIS to each of the tables cited above The access restriction acreages vary by alternative due to the proposed mix of recommended roadless areas and other management areas within each alternative. Refer to the narratives which accompany each of the tables The tables cited are now II-8, II-30, and IV-18 in the FEIS.

CONSULTATION

COMMENT NO. 2: We suggest that the final documents reflect consultation with the Bureau of Mines and that adequate maps of existing and potential mineralized areas be provided.

FOREST RESPONSE:

Consultation with the Bureau of Mines has been completed (see process records) and the need for additional mapping was considered. Further investigation has determined that proposed additional potential areas are now considered insignificant by the Bureau of Mines. Mineral maps are located in Appendix I of the FEIS. More detailed maps showing mineral potential cannot be provided at this time because comprehensive mineral surveys have not been completed These will be programmed in future years as priority funding and mineral survey agency personnel become available

MINING ACTIVITY

COMMENT NO. 3: Minerals should be treated as a positive factor rather than as a potential problem in terms of other resource values. The DEIS in tone and content slights mineral exploration and development. Mineral production appears to be viewed as an activity to be tolerated rather than an activity with a positive value that should be encouraged. The mineral withdrawal situation also needs to be discussed.

FOREST RESPONSE:

Descriptive wording in all mineral sections of the FEIS has been modified to reflect the desired outlook toward mineral exploration and development on the Forest

The Federal Land Policy and Management Act of 1976 requires that all withdrawals from entry under the general mining laws be reviewed at least every 20 years and only those meeting specific criteria will be continued. By September 1, 1989, all Umatilla National Forest mineral withdrawals had to have been reviewed by the Forest Service and recommendations presented to the Bureau of Land Management for approval.

Mineral withdrawals are discussed under the Locatable Minerals section of Chapter III and under Mitigation Measures in the Minerals and Energy section of Chapter IV of the FEIS.

COMMENT NO. 4: We are very concerned about the recent increases in "recreational" mining on the National Forests and especially in wilderness. We urge you to adopt stringent regulations for such activities, particularly for such destructive techniques as suction dredging. We question whether such activities are appropriate at all on public lands.

FOREST RESPONSE:

Mining on public lands, including wildernesses, is fully supported by 1872 mining law, no matter what type or size the operation may be. Commercial mining operations must meet numerous rules and regulations of several different federal and state agencies. The State Department of Environmental Quality has recently issued new regulations Small 2-inch suction dredges are allowed to operate without many of the more-stringent regulations; however, they are not very effective for mining purposes and have not been utilized to any large degree on the Forest. There are mining claims in the North Fork John Day Wilderness, but there has been no increase in claims since the Wilderness was established in 1984. Refer to the Minerals and Energy section of Chapter IV of the FEIS.

COMMENT NO. 5: Under the Desired Future Condition in the Forest Plan (4-7), you state that the number of mining claims will decline from 1100 to 400. We wonder why, and for whom, that is a desired future condition.

FOREST RESPONSE:

The "desired future condition" is the condition the Forest expects to achieve by implementing the selected alternative. The Forest will not intentionally reduce mining claims but, based on the rapid reduction in the number of claims since passage of the Oregon Wilderness Act in 1984, the best estimate is that the declining trend will continue. The trend has been brought about by several factors--among them is a lack of interest in the claims due to the economics of mining at today's gold prices and many of the miners are reaching the age where they are physically unable to maintain the required assessment on the claims within the wildernesses, which are more difficult to access However, this outlook is only based on the past few years, and increasing gold prices could reverse the trend.

COMMENT NO. 6: The Forest should explore alternatives to maintain opportunities for placer mining in riparian areas. The draft Plan places limits on soil-disturbing activities within 250 feet of all streams and wet areas associated with streams. These measures could effectively push placer miners out of the mineral zone.

FOREST RESPONSE:

The Forest-wide Standards and Guidelines section in Appendix D of the FEIS and Chapter 4 of the Forest Plan have been revised to reflect mitigation measures for protecting riparian areas, but not to preclude placer mining which is supported by law.

COMMENT NO. 7: The Standards in A7 (Wild and Scenic Rivers) are deficient in the discussion of mineral development.

FOREST RESPONSE:

This section has been slightly revised, but is intended to be general. A full discussion of mineral management requirements within Wild and Scenic River corridors will be covered in the individual river management plans scheduled in Appendix G of the FEIS. Under Federal Wild and Scenic River Classification, mining is still a viable resource activity, subject to W&S River management regulations.

PROTECTION
FIRE/FUELS/AIR QUALITY

AIR QUALITY

COMMENT NO. 1: Protect air quality. The Cooperative Smoke Management Plan sets standards for smoke management in the state and was developed with the state's air quality goals in mind. The Forest Service is a cooperator and complies with the comprehensive guidelines of the Plan. All Forest Service plans adopt these standards by reverence and, therefore, comply with state standards.

FOREST RESPONSE:

The above statement is incorporated, in its entirety, in the Forest-wide Standards and Guidelines in Chapter 4 of the Forest Plan and Appendix D of the FEIS

COMMENT NO. 2: Regarding air quality, the DEQ's main concerns relate to impacts from prescribed burning on the Forest and from burning of the Forest fuelwood by the public within urban areas. Management alternatives should be developed that utilize woody residue and minimize smoke from prescribed burning.

FOREST RESPONSE:

Regarding air quality, the Forest is complying with the State of Washington's and the State of Oregon's implementation plans. Emission-reduction techniques (such as spring burning, burning uncured fuels, increased utilization, achieving mass fire, and burning a few days after a rain) are being practiced to minimize smoke from prescribed burning The regulation of wood stoves is controlled by local and state regulations and is considered outside the scope of this document. Management is considering utilizing residues and marketing strategy to reduce fuel loadings, thus minimizing smoke from prescribed burning (refer to Forest-wide Standards and Guidelines, Fire and Fuels, in Appendix D of the FEIS).

SLASH LEVELS

COMMENT NO. 3: Treating slash has been shown to increase the risk of wildfire.

FOREST RESPONSE:

Fire occurrence records over the past 10 years show that 2 percent of the human-caused fires and 2 percent of the acres burned were related to treatment of slash A discussion of the risk of fire is found *in the FEIS, Chapter IV, Fire, under timber harvest for each alternative One use of fire is for protection; the use is cost efficient and is responsive to land and resource management goals and objectives. By reducing the hazard, the risk may be lowered because of less fuel for new starts. The intensity of the burns is greatly reduced after treatment of the slash.*

COMMENT NO. 4: Alternative E should be amended to allow no slash burning.

FOREST RESPONSE:

The discussion in Chapter IV of the FEIS displays a range of fuel treatments for activity and natural fuels. Alternative E has the lowest opportunity, with only about one-third as many acres treated in the first decade as Alternative I. Prescribed fire for slash treatment will be used only when necessary. All practical means of smoke management (reduction, avoidance, and scheduling) will be employed.

COMMENT NO. 5: The Umatilla has an objective of leaving only two large pieces of woody debris per acre in harvest areas. This is very expensive to achieve and ecologically damaging The Forest must begin to accept higher slash loads. Lowering brush disposal costs will increase county receipts, reduce soil damage, increase the availability of firewood, and provide ideal microclimates for seedlings.

FOREST RESPONSE.

The desired fuel profile which is left on a particular site is an interdisciplinary product—fuels are reduced to protection level or to the desired residue profile to meet a number of resource objectives. Large woody materials may or may not contribute to meeting objectives. Leaving two pieces/acre would be a minimum requirement; larger amounts of residue may be acceptable in specific areas, based on resource objectives set for that site. The Forest Service is generally increasing the fuel loading levels. Economic analyses require treatment of fuels only to a protection standard with brush disposal funds. Under present protection standards, brush disposal costs are as low as possible. No increase in county receipts is anticipated by changing fuel profiles.

PRESCRIBED FIRE

COMMENT NO. 6: "Prescribed fire will be utilized to meet management objectives and maintain fuel profiles in all ecosystems... However, unplanned ignitions may be used as prescribed fire if (A) a prescribed fire plan has been prepared and approved..." (See Plan, p. 4-57) Will the entire Forest have a fire management plan developed in advance of unplanned fires that might serve beneficial ecosystem functions? If not, then many potentially-beneficial fires would be suppressed that might be better if left to burn.

FOREST RESPONSE:

The entire Forest will have a "Fire Management Action Plan" for implementing the fire management direction set forth in the Forest Plan. This plan requires that an appropriate suppression action and response be made for each incident. All considerations will be made and appropriate responses will consider these. Depending on the intensity of the fire, strategies other than control may be selected See Forest-wide Standards and Guidelines in Chapter 4 of the Forest Plan and Appendix D of the FEIS.

COMMENT NO. 7: In view of the historic evidence, it would probably be more accurate for the DEIS to state: (1) Those alternatives which propose the greatest amount of wilderness and roadless management would have the greatest risk of large, destructive wildfires and water quality degradation; (2) natural mortality from insects and diseases, especially in unmanaged stands, creates the bulk of Forest residues, which increase the risk of catastrophic wildfires; and (3) wilderness and roadless area designations can have a significant effect on wildlife, watersheds, long-term water quality, and fisheries if catastrophic wildfires break out in unmanaged stands. As a minimum, the scattered references in the DEIS should be brought together into a clear statement that explains: (1) the environmental effects of non-management can be as bad as, or even worse than, the effects of planned management activities; and (2) an active timber management program can significantly reduce the risk of catastrophic natural events. The FEIS should make these facts clear and give them full consideration in selection of the "environmentally-preferable" alternative.

FOREST RESPONSE.

Catastrophic events, such as large intense wildfires, floods, and volcanic eruptions, are generally beyond the control or influence of land management agencies. The understanding of the long-term effects of catastrophic events on water parameters such as stream channel stability, water quality, and fisheries is limited at this time However, the assumption that roadless areas represent significantly-greater risk of impact from catastrophic events (primarily those from catastrophic wildfire) has not been substantiated. This assumption is apparently based on the premise that there are no effective management tools available to control excessive fuels buildup in wilderness and other roadless areas This is not the case. Implementation of prescribed burning and burning within prescription should result in smaller, more-frequent, less-intensive burns than may have occurred under old total suppression-dominated management schemes. It must also be considered that catastrophic events greatly increase erosion and sedimentation from more intensely-managed lands as well as from roadless areas. Indeed, watersheds exhibiting poor streambank or watershed conditions due to past management activities would be expected to exhibit severe impact from catastrophic events of lesser magnitude and more frequent occurrence than those producing the same level of impact in unaltered watersheds in more stable condition. The above-mentioned situations preclude a conclusion about the relative water quality impacts of the alternatives, as you propose.

PEST MANAGEMENT AND PESTICIDE USES

USE OF CHEMICALS, PESTICIDES, AND CONTROL AGENTS

COMMENT NO. 1: An assessment of the effects of chemical use must include the implications of management programs on adjacent lands, including spillover, drift, and destruction of pollinators. Herbicide and pesticide spraying should be curtailed and should never be used near lakes or streams. The Plan should incorporate an environmental impact statement covering the use of insecticides. Should the use of chemical herbicides again become legal on the Forest, a careful set of application guidelines and monitoring safeguards should be implemented to assure that a minimum of non-target, native plant species is affected incidentally.

FOREST RESPONSE:

Application standards and guidelines and monitoring requirements for the use of herbicides on National Forest System lands have been established as a result of the completion of the Regional EIS for Managing Competing and Unwanted Vegetation (December 1988). The requirements of EIS (including public involvement and adjacent landowner coordination) are summarized near the beginning of Chapter IV of the FEIS.

COMMENT NO. 2: We want to see bug infestations eradicated with chemicals, if necessary.

FOREST RESPONSE:

Forest-wide Standards and Guidelines for pest management (Appendix D of the FEIS and Chapter 4 of the Forest Plan) state the Forest intent to apply integrated pest management to all National Forest System acres of the Umatilla National Forest. Management intent is normally to control pests at endemic levels rather than attempt eradication of a species Methods may include cultural or silvicultural, biological, mechanical, manual, prescribed fire, or chemical treatments.

COMMENT NO. 3: We also have concerns about indiscriminate spraying of *Bacillus thuringiensis (B.t.)* over water, and suggest monitoring of these spray programs

FOREST RESPONSE:

A project-specific environmental analysis and document are prepared for each proposed spray project; details include application standards and guidelines and monitoring requirements necessary for project implementation.

NOXIOUS WEED POPULATIONS

COMMENT NO. 4: A much more thorough discussion of the effects on native plants by noxious weed introductions should be provided.

FOREST RESPONSE:

The discussion in the Ecosystems/Vegetation section of Chapter IV of the FEIS has been expanded.

COMMENT NO. 5. On page III-12 in paragraph 2, how was the figure of 6,000 Forest acres (infested with noxious weeds) arrived at? In paragraph 6, what are the plant species not classed as noxious weeds that have caused economic loss to wildlife? Weeds that need to be added to the problem weeds list in Table III-6 include: Scotch thistle, spotted and Russian knapweed, musk thistle, medusahead rye, yellow toadflax, and leafy spurge. These weeds need to be acknowledged as problem weeds even though they may not occur on the Forest.

FOREST RESPONSE:

The 6,000 acres infested with noxious weeds is an estimated total based on inventories current to 1985. An infested acre can vary from having one or a few individuals per acre all the way to a pure stand of a weed species.

Paragraph 6 refers to plants that have caused economic loss to livestock operators, not to wildlife.

Table III-6 (also found in Chapter 4 of the Forest Plan) is subtitled "Primary Problem Weeds on the Forest" and did not include all noxious weed species found on the Forest. It has been reformatted to follow your recommendations This is Table III-7 in the FEIS, and is entitled "Problem Plants on the Umatilla National Forest."

COMMENT NO. 6: Entire genera of native plant species should not be lumped together as "problem plants" as is done in Table 4-9 on page 4-25 The Plan should provide a clear and highly detailed outline of just which "poisonous" native plants the Forest intends to "control."

FOREST RESPONSE:

In response to public comment, Table 4-9 (and Table III-7 in the FEIS) has been rearranged to display more than the primary species of noxious weeds, and footnoted to state that certain species in the problem plant genera are sensitive plant species. Entire genera of some native plants are, however, poisonous to domestic livestock and will continue to be listed as such The paragraph concerning control of poisonous plants has been modified to reflect current Forest policy

COMMENT NO. 7. The final Plan should clearly discuss and enumerate noxious weeds, provide options for prevention and for control, and discuss economic and environmental tradeoffs of these options, including those for aggressive control efforts.

FOREST RESPONSE:

The Forest did not go into detail concerning noxious weed control, having determined early in the planning process that control would take place on the Forest (pending preparation of the Regional EIS for "Managing Competing and Unwanted Vegetation") regardless of which alternative was selected. A noxious weed control plan for the Umatilla National Forest is currently being prepared and is scheduled for completion in the summer of 1989. It will address the items you mention and more, and will be incorporated by reference in the Forest Plan.

COMMENT NO. 8: Reduced grazing levels would decrease the threat of noxious weed invasion and substantially reduce the need for costly weed control programs. The draft documents do not appear to have considered the values of such reductions.

FOREST RESPONSE:

A discussion of the effects of livestock grazing, and other factors, on noxious weed populations is found in the Noxious Weeds section of Chapter IV of the FEIS. As discussed in Chapter III, noxious weeds are spread in many ways other than by livestock, including wind, big game and other wildlife, vehicles, hunters, and seed mixes.

COMMENT NO. 9: On page III-12 (under Noxious Weeds and Poisonous Plants) livestock, not just "animals", and the activities associated with livestock management should be identified as a major source of noxious weed problems. This is discussed later on page IV-23.

FOREST RESPONSE:

Your suggested change has been incorporated.

TRANSPORTATION

ROAD USE

COMMENT NO. 1: The documents identify several highways (Highways 204, 207, 244, 395, & I-84) and connecting county roads as providing the major access to the Forest. Yet the documents offer no assessment or analysis of potential impacts the various alternatives could have on these highways and county roads. Varying amounts of logging and recreational traffic tied to specific alternatives could affect highway division and county construction and maintenance planning

FOREST RESPONSE:

An analysis of Forest-related traffic volume impacts upon state and county roads will be done for the selected alternative, and results will be shared with the affected agencies It was not intended that this type of information be incorporated into the planning documents Forest expectations are that there will not be any significant increase over existing volumes or types of uses from the current patterns. The mix of Forest-related traffics upon state and county road systems should be very similar to current percentage mixes.

COMMENT NO. 2: Do you have a breakdown of the number (by types) of vehicles running around in the national forest?

FOREST RESPONSE:

The Forest has traffic count data on most of its arterial and major collector roads In many cases, this data has been classified into vehicle types; much of the work is done by way of visual counts and some electronically-activated camera devices. The Forest does not have data for all roads on the Forest system. Most projections of vehicle use on the Forest system are made from the counts and classifications collected on the arterial and collector system. Chapter III of the FEIS includes discussions about the transportation situation An indication of traffic volumes can be obtained from review of the subsections dealing with recreation and timber.

COMMENT NO. 3: The Plan should include information on the thinning of trees adjacent to state highways for safety reasons, as a policy concerning timber harvesting, and for management of lands adjacent to state highways.

FOREST RESPONSE:

The Forest will continue to work with the state highway department in accordance with the agreements in our coordinating Memorandum of Understanding It is the Forest intent to aggressively pursue the harvest of hazard trees along major travel routes The Forest is concerned about safety of the Forest user and intends to offer timber salvage sales and other commercial opportunities for the removal of those dead trees and species that are within falling distance of roadways and are most prone to windfall. Lands adjacent to state highways will be managed according to direction in Management Areas A3 and A4. The Forest Plan also includes Forest-wide Standards and Guidelines in Chapter 4 that address the need to coordinate travel management needs with the appropriate state and county agencies. This same section identifies the purpose of road design, construction, and reconstruction as one of providing a safe route of travel

ROAD DENSITY

COMMENT NO. 4: A proactive road closure policy is recommended for the Umatilla National Forest. A detailed description of the Forest road closure policy is needed in the Plan, along with a discussion of the Forest intended enforcement plans for its road closures. The definition of a closed road is needed; one suggestion is that it have two basic criteria: (1) A maintained physical barrier; and (2) no more than one vehicle trip per week during the operating season.

FOREST RESPONSE:

The road closure policies are described in the Forest Plan, Chapter 4, Resource Summaries. However, specific district access decisions are not yet completed, but are scheduled for preparation as shown in Implementation Schedules, Appendix A of the Plan. The Forest intends to develop access management plans at each district and incorporate these as amendments to the Forest Plan. A statement of guidelines for development of access management plans at each of the ranger districts has been prepared Closed roads are defined in the Glossary of the FEIS and Plan; in addition, a process paper documenting definitions of closed roads is also on file.

COMMENT NO. 5: The preferred alternative proposes to build 1,133 miles of additional road during the first decade. There are already too many roads on the Forest. The opportunities for reducing road mileage for a given amount of timber harvest needs to be explained. We feel that the percentage of roads built in the first decade should be reduced to slow the impact from 65 to 40 percent of new roads in the Forest. Where on the district will the construction occur? Active slump and landslide areas should not be considered for road construction at all.

FOREST RESPONSE:

The amount of road to be built in a decade was estimated based upon assumptions in the Forest planning model A discussion of the planning model constraints and assumptions can be found in Appendix B of the FEIS The transportation development assumptions were evaluated and revised prior to producing the FEIS. The number of road miles to be built during the first decade was found to be somewhat less than the DEIS had indicated. Reruns of the planning model indicate a first decade output of road construction now of 925 miles. This reduction in miles will spread the overall impact of new road construction over the next 40 years in a more balanced fashion.

Landtypes by allocation zone have been evaluated for their roadability and cost to construct new roads. These areas are considered in the planning model for new construction based upon the amount of road already present and the feasibility of additional road construction. The majority of new roads in the first decade will likely occur in predominantly unroaded areas Others will be single, short, local roads scattered in areas that currently do not have adequate access for complete land management consistent with the management area direction. The needed roads were adjusted on a management area basis for the revised model and Forest Plan. Active slump and landslide areas will typically be avoided when locating new roads for construction. When these are unavoidable, protective measures will be taken in the design and construction phases to reduce the risk of mass movement or undesirable soil loss.

DESIGN STANDARDS

COMMENT NO. 6: Impacts associated with road building and timber harvest activities can be moderated or "completely avoided" through proper road design, construction, and maintenance.

FOREST RESPONSE:

Impacts to resources can be mitigated through proper road design, construction, and maintenance The Forest-wide Standards and Guidelines in Chapter 4 of the Plan are intended to guide the Forest in achieving minimal resource impacts. The Forest will also operate under the guidelines established in the Pacific Northwest Regional Document published in November 1988 entitled "General Water Quality Best Management Practices." While this document is not direction, it will serve as a guide to Forest personnel in a variety of land management activities including road design, construction, and

maintenance. Other mitigating measures used in road development and management are shown in the Transportation section, Chapter IV of the FEIS.

COMMENT NO. 7: The agency should estimate costs for maintaining the inventoried segments of roads and for closing particular segments.

FOREST RESPONSE:

The costs for maintaining the Forest road system have been accounted for in the Forest Plan budget (see Appendix A, Table A-13, of the Plan). Costs for closures will vary depending upon the actual method of closure used Various access alternatives will be evaluated for effectiveness and economics. Decisions on road closures relative to length of time, reason, and consequences will all have a bearing upon the method and cost of closure of particular road segments

COMMENT NO. 8: If "problems caused by roads will be corrected," it would be useful to have an inventory of existing roads that are causing problems.

FOREST RESPONSE:

The Forest annually prepares a road maintenance plan (see Forest Plan, Chapter 4, Forest-wide Standards and Guidelines, Transportation System) that identifies those roads that will be receiving maintenance attention during that year Engineering personnel conduct road condition surveys over the majority of the road system annually in order to prepare a maintenance plan for treating the priority roads Most of the road problems that occur in the course of a year are identified and maintained in this process. Problems of a recurrent nature are identified and programmed for more extensive repair or reconstruction through the capital improvement program. Many of the roads appearing in Appendix A (Table A-11) of the Forest Plan are projects with recurring problems or deficiencies

COMMENT NO. 9: We are concerned about the cost for road building and the ability of timber to support these costs. The agency should provide estimates of costs of extending logging roads (e g., costs per mile relating to soil and slope).

FOREST RESPONSE:

Standards for Forest roads are continually being monitored to ensure that the lowest standard is provided for the given objectives It is the intent of the Forest-wide Standards and Guidelines (Forest Plan, Chapter 4, Transportation System) to help direct Forest engineers in matching road standard with road objective Changing road standards have resulted in lower costs for construction. In recent years, some of the techniques used to reduce costs of Forest roads have been: (1) Reduced clearing widths, (2) design of limited-strength roads resulting in reduced surfacing depths or no surfacing, (3) additional disposal options for construction debris, and (4) use of field survey and design techniques resulting in reduced excavation amounts. These and other methods have brought about a continued downward trend in average road construction costs over the last 5 years Road costs have been estimated and included in the model for various slope characteristics (see FEIS Appendix B, Table B-IV-4) Refer to the Timber section of Chapter III of FEIS dealing with below-cost sales.

ROAD CLSOURES

COMMENT NO. 10. The FEIS should include an inventory of existing roads and describe in more detail the Forest road management plans, including road closure policy. Forest travel management plans should be coordinated through the public and various affected public and governmental agencies.

FOREST RESPONSE·

The Forest does have an inventory of its existing 5,800-mile road system To include such an inventory in the FEIS would make the document excessive in size The FEIS includes reference to the Forest policy regarding road closures in Chapter IV (particularly in the section dealing with the Environmental

Consequences of the Alternatives with regard to Recreation, Wildlife, and Big Game). Many roads will be closed in order to meet Habitat Effectiveness Index (HEI) and other resource management objectives, as described in Chapter 4 of the Forest Plan (Management Area direction and Resource Summaries) Additionally, the Forest travel plan will be developed from these same objectives The Forest intends to involve the public (including other agencies) in road management, review and revision of travel plans, development of access management implementation, and preparation of individual projects.

COMMENT NO. 11: There is no discussion of the cumulative effects of new roads in areas already presently roaded. Addition of only a relatively few miles of new roads could make an area untenable to big game and many other species. We are further concerned when 2,000 miles of additional roads are projected for the future. Based upon 2.6 acres per mile, this removes some 18,000 acres of Forest base from wildlife habitat. Does this figure include major Forest roads already in place? We have seen data indicating that 4.0 acres per mile are lost. The projected miles of road can cause damage much out of proportion when added to the present acreage lost.

FOREST RESPONSE:

While the presence of roads on the Forest does have potential adverse affects on such resources as soil and water, the road itself has been shown not to be detrimental to wildlife species; it is the use of these roads that can have an adverse impact. For this reason, the Forest has placed a high emphasis in the implementation of the Plan on road management The roads remaining to be built on the Umatilla are primarily local roads with single-purpose uses. Once that use has been satisfied, the Forest anticipates that many of these roads can be closed to access until the next commercial use is programmed In many cases, road closures will be for periods of 5-10 years in length.

The number of acres taken up by roads will depend upon the standard to which the road is being built Most arterial roads are of a higher standard and typically will have wider clearing for sight distances that are consistent with the speeds maintained on the road. The local roads on the Forest, which account for over one-half of the total road mileage, will typically be built to minimum road standards. A reasonable average to use in computing cleared width for local roads is 20 to 22 feet; this equates to 2.4 to 2.7 acres per mile of road. The Forest anticipates that the roads being built in the future will be predominantly low-standard local roads.

Existing road mileage on the Forest is at about 5,800 miles. Assuming 2.6 acres for each mile of road, this equates to nearly 15,080 acres. The projected increase in road miles over the 50-year planning period is 1,638 additional road miles (see FEIS Table II-8) This would be an increase of 4,258 acres of land lost to roads (for a total of 19,338 acres). It should also be noted that nearly 800 miles of road on the Forest road system are designated as short-term roads ("primitive" roads) and will be obliterated and allowed to return to natural resource uses. This would bring the total Forest acres dedicated to roads to about 18,538 acres—around 1 percent of the total Forest acreage About 50 percent of the proposed and existing roads are planned to be closed to vehicular traffic by gates, barriers, area closures, or other effective means, and closed roads are often used by big game and other wildlife as travelways The consequences of open roads are discussed in detail in the Wildlife section of Chapter IV of the FEIS.

COMMENT NO. 12: The Plan states that open road densities will be reduced to 2.0 miles per section. From a resource management standpoint this does not seem to be very practical or efficient, and it is the most restrictive of all the plans we have reviewed.

FOREST RESPONSE:

It is not the Forest intention to reduce open road densities to 2.0 miles/square mile everywhere on the Forest. Based upon best judgment and analysis of effects of implementing the Plan, the Forest expects that the Forest-wide average open road density will be near this figure. The Forest road system will be managed according to resource management objectives described in each management area (see Forest Plan, Chapter 4) Some management areas will likely exceed the expected Forest-wide average density, while others will be less Monitoring will focus on resource management objectives (e g , Habitat Effectiveness Index, Recreation, Soil and Water, and others) as described in Chapter 5 of the Forest Plan and not Forest-wide open road densities

LANDS

RIGHTS-OF-WAY

COMMENT NO. 1: Quite often highways in national forests do not have defined rights-of-way. It is suggested the FEIS acknowledge that when rights-of-way for federally-aided highway routes or Forest highway routes are not defined, a management effort will be made to work out such details with the government official having operating responsibilities for that route. National Environmental Policy Act requirements will apply to all highway improvements.

FOREST RESPONSE:

The onsite location of the highway defines the location of the easement. The easement language provides that the state will consult with the Regional Forester prior to any reconstruction. The Regional Forester, in turn, must assure that all requirements of NEPA are met before authorizing construction.

RECREATION RESIDENCES

COMMENT NO. 2: To prevent leased property from remaining in one family for generations, it is suggested that whenever the current owner desires to sell, transfer, or dies, the lease be returned to the USFS for 1 month, with anyone allowed to bid or offer a buying price for the leasee's property. (See Chapter 4 of the Forest Plan, page 1, Forest management goals.)

FOREST RESPONSE:

Recent revisions to the recreation residence program have been coordinated with national recreation residence associations. The cabin and other structures are owned by the individual and it is their right to dispose of them in whatever way they prefer.

MILL CREEK RESERVOIR

COMMENT NO. 3: More study should be given by the Forest Service, in connection with the Corps of Engineers, to the possibility of enhancing the recreational opportunities afforded by the Mill Creek overflow reservoir.

FOREST RESPONSE:

This reservoir is not located on National Forest System lands, and is managed by other government agencies. It is basically a municipal park located on the outskirts of Walla Walla. The recreation opportunity provided is nearer the "Urban" end of the recreation opportunity spectrum (ROS) scale than normally provided by the Forest Service. Recreational use on and around the reservoir is only indirectly related to the Umatilla National Forest; most users are seeking different experiences than provided by the national forest. The recreational opportunities are considered in context of what is available in the area of influence.

RECREATION

RECREATION SITES

RECREATION DEMAND

COMMENT NO 1: How can the increasing recreational use in the Umatilla Forest be met?

FOREST RESPONSE:

> *The increasing amount of recreational use on the Umatilla National Forest will be met in a number of ways. In 1988 a National Recreation Strategy was implemented to strengthen and round out the multiple-use management of the national forests, based on the new forest plans. It is a conceptual framework aimed at finding creative and imaginative ways to take advantage of outdoor recreation opportunities by working with people Its ultimate goal is customer satisfaction with more, and higher quality recreation services. The Forest Plan incorporates the philosophy and concepts of the national recreation strategy. Increased management emphasis will be placed on providing a wide variety of recreation opportunities across the Umatilla National Forest. Recreation will be considered an equal resource with other Forest uses and resources with respect to budgets, staffing, and planning (see Forest-wide Standards and Guidelines) The Plan provides for upgrading and expanding recreation sites to make better use of them, and for constructing new sites in response to: (1) Identified demand for additional capacity, (2) specific needs for customer satisfaction, or (3) to fill recreation opportunity voids Emphasis will be placed on restoring trails to established standards, constructing new trails to provide loop routes, and eventually, building new trail networks Managers are optimistic that Congress will provide adequate funding to accomplish these improvements. A strong partnership effort with other recreation providers (in the public and private sectors) will also be needed to leverage available funding and provide other support*

COMMENT NO. 2: Developed recreation need not be limited to the overcrowded water-related sites. More emphasis should be given to dispersing activities over the remainder of the Forest.

We are very concerned with this statement in the Plan (p. 2-8): "Overall there is no need to develop any additional campgrounds or picnic sites on the Forest to meet future demand." Not only does the Forest need to increase (not merely "consider," as in the DEIS, p III-54) the capacity of heavy use sites, but should make plans to develop new locations during the plan period.

It is quite evident that the Plan analysis and subsequent provisions for recreation opportunities failed to adequately consider the information available on public needs and use trends developed in the most current edition of the State-wide Comprehensive Outdoor Recreation Plan (SCORP), as is required in 36 CFR 219.2(E). Your demand figures are interpreted in terms of "expressed demand" which means no increase in use of the facilities above present levels.

The DEIS and Plan state that, overall, no need exists to develop additional campgrounds to meet future demand because any increased demand can be met by enlarging the capacity of existing sites. This position is based on the SCORP projected need for campsites Statewide. More than anything, this approach points out the danger of relying on statewide SCORP estimates. While SCORP projects a 36 percent statewide increase in campground demand, it projects a 165 percent increase for the seven-county area surrounding the Umatilla NF. We believe that substantial need exists for more campgrounds on the Forest in the near future and request that you re-evaluate your proposals here.

Use of the outdated projections of the Pacific Northwest (PNW) River Basins Commission Program is inadequate to effectively assess use trends. These trends are not changing in direct proportion to population growth because the use preferences of National Forest recreation clientele have undergone dramatic change in recent years. Due to the aging of the average influx of visitors, demand for opportunities entailing strenuous activities in remote areas has leveled off (relative to population growth) Today, the majority of publics that visit the national forests seek recreational opportunities that are accessible and have facilities developed to satisfy their expectations The 1983 SCORP indicates that the need for additional campsites in the area of influence will increase by 165 percent before the end of the plan period on the Umatilla NF. With only 32 developed recreation sites within the Forest boundaries, and no apparent inventory of potential sites

available, it is very likely that latent demand presently exceeds the Forest expressed demand, and more developed sites are needed now and in the near future

Throughout the proposed Plan, which is assessing recreational demand and need, references are made to the Oregon SCORP and the PNW River Basin Commission Study. We would like the Forest Service to consider some specific need identified in the 1985 Washington SCORP and the 1987 Washington off-highway vehicle plan. We are concerned because the demand for semi-primitive experiences is expected to exceed capacity. We see an imbalance,between types of recreation demands and the preferred alternative provisions to meet such demands. This imbalance needs to be addressed in light of the projected demand of the Washington SCORP.

FOREST RESPONSE:

Although developed recreation sites need not be limited to water-related sites, priority will be to place campground improvements at sites preferred by the users The majority of the public would prefer to camp near water during the summer months. Based on the Forest analysis of the latest SCORP information, adequate space is available at the water-related sites to meet demand for the next planning period.

An inventory of potential recreation sites was conducted several years ago Most of the inventoried sites are not developed, but many are used informally (e g , by hunters), and may even have had some minimal improvement made on them. Use at all recreation sites will be monitored. As occupancy rates approach capacity, analysis and evaluation will be conducted according to the NEPA process to determine the appropriate way of responding to the demand. There will continue to be a wide variety of sites throughout the Forest available for placement of recreation sites.

Chapter III and other parts of the FEIS were updated to reflect the latest published SCORP information and were modified to delete the term "consider." Chapter 2 of the Forest Plan identifies a need for better methods to estimate demand for various types of recreation

The Forest Plan does not restrict new facilities to water-related sites A guideline was added which states:

6. *New recreation sites and facilities may be constructed in response to identified demand for additional facilities, specific needs for customer satisfaction, or to fill recreation opportunity voids. An environmental analysis will be use to confirm the need for new sites and facilities.*

COMMENT NO 3: Anticipate an increasing demand for easily accessible recreation opportunities as the "baby boom generation" slides into the "greying of America" over the next several decades.

FOREST RESPONSE:

Although predicting the recreational patterns of Americans is very difficult, information shows that our nation is becoming increasingly older, better educated, and ethnically diverse. Most recreation providers believe that tomorrow's seniors will remain more active outdoors than earlier generations What we don't know is whether older, more urbanized, more diverse Americans will favor new or traditional activities (Crandell 1989). The Forest-wide Standards and Guidelines in the Forest Plan have been changed to better emphasize responsiveness to customer needs and increased accessibility to the disabled The method used to update the Plan and adjust for changing recreation use is described in Chapter 5

COMMENT NO. 4: We recommend the Forest reanalyze recreation demand relative to developed and dispersed recreation needs, taking into consideration. (1) The vastly differing trends in visitor demographics, and (2) opportunity preferences which clearly tend to favor increasing emphasis on developed site facilities and expanded road access Since the Forest has potable water available on only four sites, there is considerable room for improvement to accommodate the needs of hunters and motorized recreationists. Data collected from the four state parks in the vicinity should be considered in evaluating trends and visitor needs.

FOREST RESPONSE.

As described in response to Comment No. 2, the Forest has reanalyzed demand based on published SCORP information Forest goals, standards and guidelines, land allocations, and implementation and monitoring direction provide flexibility in responding to contemporary demand The Forest planning process is a continuously repeating process which insures that the Forest Plan is responsive to changing conditions.

Although use of the adjacent state parks may give some general trends, many of the users are seeking a different experience at the parks than offered by the Forest, and their use may not reflect what the Forest could expect The Forest has recognized the need to upgrade the existing sites to better serve customer needs (e.g , potable water, better accommodations for modern RV's, etc.). See Forest-wide Standards and Guidelines for Recreation, and direction for Management Area A6 in Appendix D of the FEIS and Chapter 4 of the Forest Plan.

WINTER SPORTS SITES

COMMENT NO. 5: The Mt Baker-Snoqualmie National Forest plan has the following language which we believe would be appropriate to the Umatilla National Forest plan. "Existing winter sports sites will be permitted to expand on adjacent suitable lands when the demand dictates Each major winter recreation activity (alpine and nordic skiing, snowmobiling, and snow play) will have areas designated and managed to accommodate them. Other activities occurring within these areas may be limited or prohibited if they conflict with the primary activity, or if overcrowding develops. All ski areas that have expansion capacity under approved ski area master plans are expected to add development facilities. Expansion should be commensurate with expected improvements in service and be permitted on the basis of actual public need. It is anticipated that some ski areas will have base-area expansion, particularly to enhance overnight and mid-week opportunities."

FOREST RESPONSE:

Forest-wide Standards and Guidelines for recreation, and Management Area direction (A6), in the Umatilla's Forest Plan will allow the same opportunities as the MBS Plan Neither of the winter sports sites on the Umatilla has current master plans; when they are completed, an environmental analysis will determine expansion capabilities. Both ski areas have potential for improvement and increased capacity within their permitted area In addition, adjacent lands will continue to be available for expansion (if shown to be appropriate) after an environmental analyses has been completed.

COMMENT NO. 6: The option to expand Spout Springs ski area into the Lookingglass roadless area should be retained.

FOREST RESPONSE·

The Spout Springs Ski Area owner is presently involved in the master planning process He expects to make a proposal to expand the ski area into part of the Lookingglass Roadless Area. Since the master plan is still in the developmental stage and will require a substantial amount of environmental analysis, it is premature to designate additional area at this time in the Forest Plan However, to prevent the loss of the opportunity to develop additional area for downhill skiing, the Forest has placed documentation into the official planning records which will expedite changing the management strategy from A2 to A6, using the revision process, if the environmental analysis indicates it to be the desired action

RECREATION ACTIVITIES

RECREATION DEMAND

COMMENT NO. 7: It is stated that semi-primitive recreation opportunities are expected to exceed supply by the year 2030. The current supply of these opportunities is within the wilderness and roadless areas. The Forest ability to meet demands and supply primitive and semi-primitive recreation opportunities will depend primarily on the disposition of the roadless areas. Improved access to entrance points and a trail building

program within existing wilderness areas would at least double the carrying capacity while staying within the Limits of Acceptable Change Therefore, it is apparent that the number of acres available isn't as significant an indicator of responsiveness to the availability of this type of recreation as is the intensity of planned development.

FOREST RESPONSE.

Supply and demand relationships for recreation are extremely complex to predict The Forest agrees that numbers of acres are not the only indicators of responsiveness, but it has selected that factor because it is more measurable than some others (e.g., management intensity), it reflects the Forest ability to meet demand, and it shows the Forest ability to resolve an issue Other factors (demography, individual and social values, and technological change) also need evaluation The amount of primitive and semi-primitive recreation opportunities was identified as an issue early in the planning process. The analysis of the management situation indicated that a shortage could occur in the future. In addition to the analysis, which was based on available information and standard procedures, public response to the DEIS also verified that much of the public was worried about the future capacity of the Forest for primitive and semi-primitive recreation opportunities.

Meeting demand for a wide variety of recreation opportunities is more complex than providing a geographic area which will hold a certain number of people. The social and managerial setting is as important as the physical setting It is the recreation resource manager's responsibility to provide opportunities for recreationists to seek satisfying experiences in preferred settings. The Forest Plan provides for some increased capacity in areas providing primitive and semi-primitive recreation; however, significantly expanding capacity (and use) will probably make it difficult to achieve the experiences that people are requesting and seeking People seeking an experience on the primitive end of the ROS scale may not be satisfied in an area laced with trails and heavily use by people

Determining the Limits of Acceptable Change (LAC) is a continuing process which has just begun for wildernesses on the Umatilla National Forest. Preliminary LAC indicators and standards have been established based on region-wide guidelines; however, these have not been verified by "ground truth" and public involvement It is not possible to determine what "double the carrying capacity" would be at this time

The Forest Plan has identified supply and demand as a key need in the Information, Inventory, and Research Needs section (end of Chapter 2 of the Plan). That information, along with utilization of marketing techniques, will provide the basis for a better analysis of capacity for various recreation uses

COMMENT NO. 8: With primitive recreational opportunities now in short supply statewide, and soon to be much less within the Umatilla NF, one might expect that the economic analysis would value primitive recreational activity more highly and credit the alternative that provides it This was not done (DEIS II-134) and the alternatives that provide the most valuable recreational opportunities (Alternative **E**, for example) are seriously undervalued.

FOREST RESPONSE.

Lacking specific recreation values for the Umatilla National Forest, standard Resource Planning Act (RPA) values were used as a starting point in estimating recreation benefits (see FEIS Appendix B) Various Recreational Opportunity Spectrum (ROS) types (e.g , primitive, semi-primitive, roaded natural, etc.) were assigned different values. The amount (supply) of the various ROS types changed with each alternative and is reflected in the recreation benefits Thus, the discounted benefits (and costs) for recreation (including sports fishing) differed for each alternative (see Chapter II of the FEIS, Table II-34) Recreation benefits for different uses such as hunting, fishing, and camping were calculated as a constant for each alternative because the total amount of recreation use between alternatives did not change drastically (plus or minus 5 percent of the average).

Information is not available to perform a sophisticated recreation demand analysis where unit values are changed according to differing demand and supply levels Varying the value of primitive recreational activity by alternative, or based on future demand, would be speculative The amount of demand for several types of recreation is affected largely by factors beyond the scope of this plan (e g , economic situation, hunting and fishing seasons, etc) Using the "demand" information available from state and other reports, and public input, primitive and semi-primitive recreation are an important part of the

recreation issue. The Forest Plan has responded to the issue. Although a formal sensitivity analysis was not done, it is highly unlikely that increasing the value of primitive recreation significantly would change the Present Net Value (PNV) ranking of any alternative (DEIS, Table II-30).

COMMENT NO. 9: Your analysis apparently reduced the value of recreational activities by 37 percent. In addition, you assigned a zero percent real price trend to these activities while applying a one percent real price trend for timber. These assumptions can result in a serious undervaluation of the contribution recreation makes to the wealth derived from the Forest. You should support the assumptions or change them.

FOREST RESPONSE:

A standard procedure was prescribed in order to be consistent with other Forests in the Region. Nonmarket-priced benefit values from the "Draft Environmental Impact Statement for the 1985-2030 (RPA) program assessment" (pp. F-5 to F-12) were used as the starting point for recreation and other resource values because statistically valid benefit values for the Umatilla National Forest were not available. The RPA recreation value was adjusted "based on the relationship between the proportion of recreation provided by the Forest Service and the estimates of an average nationwide demand elasticity for outdoor recreation." The rationale for this adjustment is discussed in Appendix B of the FEIS.

After the FORPLAN analysis for the Umatilla National Forest was completed, the 1986 RPA values were published. The final EIS for the 1985-2030 RPA program changed the recreation values in response to public response to the RPA DEIS The following revisions to the RPA DEIS values were made:

1. *The empirical studies for recreation values were performed from the late 1960's through the early 1980's. The values were adjusted to the base year, January 1982, using the GNP implicit price deflator. However, market price for recreation has not increased as fast as general inflation. Using the real price changes for recreation (rather than for GNP) in order to adjust the study values to the January 1982 base year, reduced the values by approximately 15 percent*

2. *Most of the studies developed a value for recreation visitor days (RVD's) and wildlife/fish user days (WFUD's) using the travel cost method. Some of the studies included an opportunity cost for the travel time required to get from the user's residence to the recreation site, while other studies did not. An upward adjustment of 30 percent was made to values from studies that had not included opportunity costs of travel time, in order to make the studies consistent with each other and with the accepted methodology of the travel cost procedures. However, some studies had already included upward adjustments which were considered too high on national forest land, and some studies involved only in-state residents while others included all users. A downward adjustment of 20 percent was made to the values to correct for these and other concerns*

3. *In the DEIS, the willingness-to-pay values for the RVD's and WFUD's were reduced approximately 37 percent, making them comparable to market prices. Many comments on the RPA DEIS suggested this calculation was inappropriate. For the RPA FEIS, a correction was made by applying the demand elasticity factor only to certain RVD's and WFUD's, resulting in a 10 percent decrease in the values, instead of the 37 5 percent decrease in the DEIS.*

The revisions discussed in the three previous paragraphs resulted in the following values which are comparable to those listed in Appendix B, page B-44, of the Umatilla DEIS:

1986 RPA Recreation Benefit Values (1982 $)

Recreation Value	*Units*	*Value*
Semi-primitive Nonmotorized	*$/RVD*	*12.19*
Semi-primitive Nonmotorized	*$/RVD*	*11 16*
Roaded Natural	*$/RVD*	*8.36*
Roaded Modified	*$/RVD*	*N/A*
Big Game Hunting	*$/WUD*	*27.60*
Resident Fishing	*$/FUD*	*13 80*
Anadromous Sport Fishing	*$/FUD*	*30.36*
Anadromous Fish Commercial Harvest	*$/MLBS*	*1,050.00*

The values in the RPA FEIS were changed from the RPA DEIS, resulting in significantly higher values for standard levels of primitive and semi-primitive and slightly lower values for roaded recreation. The amounts of variation for the different types of recreation in the various alternatives tended to offset one another and would not result in significant differences total value for recreation between alternatives if the latest RPA values were used. The assumption has been made that although recreation benefit values may increase if the latest RPA values were used, the change would not be great enough to alter any decisions.

COMMENT NO. 10: Tri-Cities needs Forest Service outreach to contact customers.

FOREST RESPONSE:

The Tri-Cities, Hermiston, and Boardman areas are examples of places that lack Forest Service offices but have many users of national forest products, services, and recreation opportunities The standards and guidelines of the Forest Plan were revised to reflect an increased emphasis on providing good customer service for all Forest users.

QUALITY OF EXPERIENCE

COMMENT NO. 11: On page 2-10 the Plan states, "a key assumption is that people seeking primitive and semi-primitive opportunities will accept increased encounters with other parties in the future and continue to have satisfying experiences." This statement reflects the Forest Service attitude regarding recreational opportunities of all kinds—that less area will be required to meet projected demand All outdoor and wilderness schools teach that the opposite is actually true. One does not seek to be alone by increasing the chances of being together.

Semi-primitive recreationists will have no places to be displaced to, since other protected roadless areas on the Forest will be that much more crowded and unattractive.

FOREST RESPONSE:

The capacity estimating process provides for a range of capacity coefficients (in Persons-at-one-time [PAOT/acre]) for each ROS class (1986 ROS Book) Currently, the Forest use densities are on the low end of the range of the PAOT/acre capacity criterion for the primitive or semi-primitive recreation opportunities. The assumption is that the densities can increase to the midpoint of that range and still provide a satisfying experience because they remain well within the bounds of acceptable standards for primitive and semi-primitive recreation. Therefore, the projected capacity calculations are based on average use densities for each ROS class and not on the existing use. The ROS system names various classes of recreation within the spectrum, but the spectrum also continues within each class. This means that conditions within the semi-primitive areas will range from those approaching primitive to those approaching roaded natural It is true that less area will be needed to meet projected demand for primitive and semi-primitive experiences, but users will continue to have the opportunity to seek their own special places to have satisfying experiences

Research has found that individuals are constantly changing their use patterns as their skill levels, physical abilities, and social behaviors change. Individual and overall use does not remain static. Although displacement (see FEIS, Chapter III, Recreation) from some places will occur, other locations and time slots (e g., weekdays rather than weekends) will be used closer to an appropriate capacity. It is also possible that people seeking primitive or semi-primitive opportunities will explore areas away from the Forest. Another form of displacement is to substitute another commensurate type of recreation One expectation of recreation providers is a growth in near-to-home recreation demand; this could result in less crowded areas continuing to be available in the more remote portions of the Forest.

Management of conflicts (primarily through providing information and communication) and displacement (specifying clear objectives, maintaining standards, and carefully evaluating implications of changes in recreation opportunities) should allow the Forest to meet primitive/semi-primitive demand. The need for better supply/demand information has been recognized in Chapter 2 of the Forest Plan, and the ROS (especially primitive/semi-primitive) will be monitored Adjustments to land allocated for primitive/semi-primitive recreation may be made in the future to respond to needs at that time.

HUNTING/FISHING

COMMENT NO. 12: The EIS needs an evaluation of hunting days as compared to other Forest uses.

FOREST RESPONSE:

Table III-26 shows hunting by ROS class and Table III-27 shows hunting compared to other recreation uses through time. Several tables and accompanying discussions compare hunting (often referred to as "Wildlife Use – Big Game") with other resource outputs and values, (Tables II-6, II-7, II-8, and B-IV-6).

COMMENT NO. 13: Create a new allocation for dispersed recreation "hunter camps" or include them in A9. Identify and fully protect all such hunter camps using ranger district inventories. Designate a no-cut perimeter around each site.

FOREST RESPONSE:

Management Area A9 is intended for "areas with significant cultural, historical, geological, botanical, or other special characteristics." Although hunter camps could be located within these types of areas, they do not meet the intent of the A9 area Hunter camps will be managed according to Forest-wide Standards and Guidelines for dispersed recreation (see Appendix D of the FEIS). This guideline states that project planning will provide for the protection of established occupancy spots (especially hunter camps) and other special places whenever practical.

COMMENT NO. 14: In chapter 4 of the Forest Plan, page 15, under Forest Management Goals, add a new item to permit hunting and fishing during seasons as per state laws

FOREST RESPONSE:

Providing opportunities for hunting and fishing (including access) is emphasized throughout the document Complying with all Federal, state, and local laws is a basic tenet which is stated in the introduction to Appendix D of the FEIS and in Chapter 4 of the Forest Plan. State hunting and fishing seasons and laws are the responsibility of the states and outside the scope of the FEIS.

CAMPING

COMMENT NO 15: You should schedule additional construction of dispersed recreation sites – areas with one and two campsites and with minimal development. Such development should be scheduled and constructed as part of the ongoing road and timber harvest activities

FOREST RESPONSE.

One of the most important aspects of the Forest recreation management goal is providing freedom of choice for people to select recreation sites to their liking. Undeveloped sites provide some the best opportunities to meet this goal Management intent is that users may choose a site for temporary occupancy according to their particular style. The DEIS addressed existing sites but did not specify how (or if) new sites would be developed. Although sites for one or two campsites do not normally warrant construction, it is recognized that occasional facilities may be appropriate No new sites are specifically planned for construction; but the Plan provides direction to take advantage of opportunities, utilizing the NEPA and NFMA process. The Forest Plan includes two new standards and guidelines in the Recreation section of Chapter 4:

"Location and design standards for new or reconstructed roads and trails will accommodate user-developed occupancy spots at locations and quantities appropriate with the planned ROS experience level."

"Provide specialized or modernized facilities, or site modification, needed to maintain or enhance the variety of recreation opportunities, prevent pollution from human waste, provide safety (including fire), or reduce undesired resource effects."

OFF-HIGHWAY VEHICLES (OHV's)

RESOURCE CONCERNS

COMMENT NO. 16: The draft documents do not adequately consider the numerous adverse effects generated by OHV activity. Information exists documenting the degradation of animal and plant habitats by OHV activity (e.g., Berry, C.H 1980). A review of the effects of off-highway vehicles on birds and other vertebrates (p 451-467 in USDA For. Serv. Tech. Rept. INT-86). This paper also addresses effects on plant communities

The EIS should include specific information as to how OHV-designated areas will be affected in terms of deterioration of native plant communities, wildlife habitat, environmentally sensitive areas, and other items specified in FSM 2355.14 This has been ignored or glossed over in the DEIS The cumulative effects may be substantial. Assessment of effects must include the implications of management programs on adjacent lands, including spillover of destructive activities such as those involving OHV's

FOREST RESPONSE:

OHV (off-highway vehicle) recreation use was identified as a major part of the recreation issue, which is one of the nine key issues on the Forest (FEIS, Chapter I). Reviewers of the draft Plan made many comments on the use of OHV's; they expressed strong opinions about OHV management on various sides of the issue. During the issue identification and analysis process, the interdisciplinary team (IDT) recognized the potential conflict between OHV's and other recreation uses. The IDT also determined that the amount and type of use, administrative restrictions which are in place, and the physical properties of the land and vegetation (resource capabilities) tended to mitigate potential effects. However, several important OHV effects on the Forest were identified and discussed in the Wildlife and Recreation sections of the FEIS, Chapter IV. Other aspects of OHV use and effects appear throughout the FEIS and Plan. The Forest Plan includes a discussion of a "Motorized Access and Travel Management Plan" in Appendix A which discusses the OHV issue and implementation.

COMMENT NO. 17: The final Plan should clearly comply with, and refer to, Executive Order 11644 (Use of Off-Road Vehicles on the Public Lands). In short, OHV activity should be restricted to those portions of the Forest that are already developed and where resource or user conflicts are not likely to occur. We do not believe that either the existing OHV management plan or the standards and guidelines in botanical areas and other sensitive areas are presently adequate for this task.

FOREST RESPONSE:

Forest-wide Standards and Guidelines refer to E.O 11644, as amended by E.O. 11989. The requirements of NEPA and NFMA are incorporated throughout the Forest and management area directions (Chapter 4 of the Forest Plan). The Forest Travel Plan, the Forest does not have a current "OHV management plan," will be reviewed annually and revised as necessary, usually biennially Site-specific use of OHV's will be determined by project-level planning (see the middle of Chapter 1) and compiled on the Forest Travel Map. Public participation will allow concerns to be included for specific areas, e.g., botanical and other sensitive areas.

COMMENT NO. 18: Item 22 on page 4-39 fails to mention the need to minimize damage to vegetation and minimize user conflict by saying that criteria will be used only where needed in closures. This reflects a misunderstanding of the intent of E.O. 11644; namely, that the criteria be used in making open designations as well as closures.

FOREST RESPONSE:

"Protect other resources" (including vegetation) and "minimize conflicts" were specified in Forest-wide Standard and Guideline Item 21 on page 4-39 of the draft Plan Item 22 intended to emphasize the primary concerns for the Umatilla National Forest. Items 21 and 22 of the DEIS were combined in the FEIS and rewritten:

"Ensure that off-highway vehicle (OHV) use is managed to protect resources, promote safety of users, and minimize conflicts with other uses (Executive Order 11644, as amended by E O 11989) Use OHV prohibitions only where needed to minimize disturbance of wildlife, provide a range of recreation opportunities, or to protect the soil and water resources "

CONFLICTS WITH BIG GAME

COMMENT NO. 19· Alternative D, which is supposed to emphasize elk, has one of the lowest (open) road densities. This is offset by the third highest amount of OHV use. The detrimental effect of high road densities is well documented in the literature and built into the model. How does the model treat OHV use? Is such use considered as detrimental to elk habitat as an open road? What studies has the Forest Service relied on in determining the effects of OHV access on elk habitat?

FOREST RESPONSE:

*According to Table II-8, Alternative **D** ranks very low among the alternatives (8th of 11) for the amount of land available to OHV use. Under Alternative **D**, OHV use would be restricted to maximize game and nongame wildlife security and would only be encouraged on a very few areas of the Forest Table II-4 indicates that Alternative **D** would have the third highest amount of land allocated to Management Area A2, but OHV opportunities would be more plentiful under other allocations in other alternatives. OHV access would be restricted to designated areas or routes*

The FORPLAN model estimates the capacity for all recreation in the semi-primitive motorized setting, but does not estimate any OHV effects. Estimates specifically for motorized recreation activities for each alternative were not made. OHV use in an area, or on travel routes, could have effects similar to those of motorized vehicles on open roads. Although no studies specific to effects of OHV access on elk habitat were used, the bibliography includes references about vehicle use on roads (Lyon 1979; Thomas and others 1979).

COMMENT NO. 20. DEIS page IV-67, last paragraph, states that roads remaining open to OHV's are not effectively closed to motor vehicles. Disturbance from OHV's does not compare with that from nonmotorized use and impacts should be assessed separately. The habitat effectiveness attributed to a closed road is not met with ORV use, so the habitat is never fully utilized by big game.

FOREST RESPONSE:

The significant effects of OHV's on the Umatilla National Forest are discussed in Chapter IV of the FEIS. Their effects on big game habitat are included in an analysis of Habitat Effectiveness Index (HEI) in the Wildlife and Big Game sections. Some roads may be closed to standard-sized vehicles but remain available for motorcycle or ATV recreation opportunities The big game habitat effectiveness model includes the effects of all types of motor vehicles. Roads available only to OHV and foot traffic would be modeled the same as roads with a similar amount of standard vehicle traffic.

SNOWMOBILE USE

COMMENT NO. 21: The Plan does not mention new snowmobile parks or additions to existing ones. The Woodland Sno-park is at capacity nearly every weekend and needs to be expanded. We want to insure that this expansion, and future additions or expansions, are provided for in the final Plan.

FOREST RESPONSE:

Sno-parks will be managed according to Forest-wide Standards and Guidelines and management area strategies for recreation. Sno-parks judged to be at Development Level 3 or greater were added to A6 Management Area in Chapter 4 of the Forest Plan Other existing or potential sno-park sites are located within A3 or A4 Recreation sites and areas will continue to be monitored (Plan, Chapter 5) in order to be responsive to public and resource needs. Future expansion or addition projects would be based on monitoring results demonstrating a need, and would require environmental analyses according to the NEPA process. If opportunities and needs occur in the future, the Forest Plan can be amended or revised as appropriate to meet the need.

COMMENT NO. 22: The Plan does not contain enough specific direction for snowmobilers. In your glossary, snowmobiles are defined as OHV's. We do not like that association because rules that apply to motorcycles don't (or shouldn't) apply to snowmobiles, and resources damaged by ATV's are not damaged by snowmobiles There are getting to be too many terms, and the Plan is very confusing about what rules apply specifically to snowmobilers. Throughout the Plan, when you are talking about OHV use, sometimes you are including snowmobile use and other times you are not. We feel it would be much cleaner and simpler to manage for two classifications of vehicles OSV for over-the-snow vehicles, and OHV for off-highway vehicles. The use of any recreation vehicle at any time of the year would fall into one of these two classes and it would be very easy to tell which rules apply to your intended use. Also, on A2 of the Plan, you discuss an OHV trail plan but there is no mention of snowmobiles.

FOREST RESPONSE:

The Glossary for the Forest Plan includes definitions used by the State of Oregon, Speciality Vehicle Institute of America, the Motorcycle Industry Council, and the Forest Service Manual.

The Forest planning team uses the all-encompassing "off-highway vehicle" term with the assumption that the subcategories will be considered when implementing management actions. The specific type of vehicle is used for evaluation of environmental effects at the project planning level. Also, additional Forest-wide Standards and Guidelines were added to the recreation section: "OHV management will consider recreation opportunities and appropriate resource considerations for the specific type of vehicle and the different seasons as appropriate. Vehicle types are motorcycle (enduro, motocross, dual-purpose), ATV, 4WD (pick-up truck, jeep-style), moped, sedan, snowmobiles Thus, snowmobiles will be included in the Forest OHV Plan.

Emphasis for providing improvements and facilities for over-the-snow vehicle use will be placed on providing groomed trails, parking areas, trail signs, and trail maps. Trail systems will provide access to play areas, loop routes, two-way travel, and access to private services such as food, fuel, lodging, etc. Long distance routes and trails connecting various loops will be considered.

TRAVEL MANAGEMENT

COMMENT NO. 23: On page 2-22 of the Plan, you list Forest information needs, but there is no mention of how or when the Forest intends to obtain this information. A travel plan is definitely needed, but we would also like to see a winter recreation plan incorporated as part of the final Forest Plan.

FOREST RESPONSE:

Activity schedules in Appendix A of the Forest Plan display more specific timeframes for some of the information needs Most of the needs will be tackled in conjunction with specific implementation analyses on a case by case basis Another important purpose of this section is to provide the research branch of the Forest Service with a listing of items to include in their program of work. It may be some years before that listing is compiled from all forests scheduled in the research program, and the research is completed.

A winter recreation plan was not incorporated as part of the Forest Plan because, although mentioned, it was not identified as a public issue or management concern during the scoping and draft document review phases of the process. Although it would be a desirable item to have, time and priority constraints do not allow it to be accomplished at this time. But, a review of the need for a winter recreation plan is scheduled in Appendix A of the Forest Plan. The Plan provides flexibility to accommodate or improve winter recreation opportunities. Although this Plan is intended to serve for a 10- to 15-year period, the planning process allows for amendments or revisions at any time A winter recreation plan could be incorporated through the update process when sufficient need arises

COMMENT NO. 24. "Off-highway vehicle (OHV) use is permitted but limited to designated routes " Where are these routes? Statements such as this should be phrased "permitted only on designated routes "

FOREST RESPONSE:

Designated open routes within areas where motorized vehicles are prohibited are shown on the Forest Travel Map and in the legal order which designates the routes (36 CFR 261)

Forest-wide Standards and Guidelines, Appendix D, were modified to clarify the purpose of the Forest Travel Plan and to drop the "plan" terminology:

Public information describing the areas and routes where motorized use is permitted, prohibited, or restricted, and explaining the conditions of use and providing reasons for such closures will be provided on a travel map. This map will be reviewed annually and revised as necessary (usually biennially).

COMMENT NO. 25: Exceptions for vehicle width should be discontinued If a road is closed, it should not be used. Closed roads are not a substitute for challenging OHV trails and the Forest shouldn't promote their use. Providing closed roads for OHV use does not meet either user's goal. Roads are not challenging enough for the OHV user, so he leaves the roads and makes hill climbs and stream crossings.

FOREST RESPONSE:

Motorized vehicle use is restricted or prohibited on roads for a large number of reasons. One reason for closing a road to motorized use is to provide a variety of recreation opportunities. Some roads have use prohibited for standard width vehicles and remain open to other types of motorized vehicles to provide specific motorized recreation opportunities. Although they are not a substitute for challenging OHV trails, they are satisfactory for some people's needs (e g., ATV use, retrieval of big game) Experience has shown that if OHV users have a properly designed trail network, they will seldom leave the trail. Closed roads are often an integral part of an OHV network. The Forest has recognized the need for a good OHV trail network and intends to provide a variety of difficulty levels and loop-ride opportunities. The Trail Capital Investment Program will be utilized to upgrade the Forest trail system. The Forest Plan does not include vehicle width designations for trails.

COMMENT NO 26: The Plan states on page 2-9 that currently the Forest maintains over 361 miles of trail open to motorcycles while the DEIS on page III-52 says that over 200 miles of trail are used by trailbike riders. If the figures are consistent, we must conclude that about 150 miles are open to OHV's even though they are not used by them. That raises the question of what criteria are being used in designating trails open to OHV's. OHV information is totally lacking for the various alternatives

FOREST RESPONSE:

Although OHV use is allowed on approximately 361 miles of trails, not all of the trails are usable because of various reasons such as: Maintenance for other objectives, extreme grades, downfall, too narrow, etc. Trails are closed to motorized use only when a valid reason exists. Guidelines for restricting OHV use are provided in the Forest-wide Standards and Guidelines for recreation and transportation and various management area strategies in Appendix D of the FEIS Generally, major environmental consequences from OHV use do not occur on the Forest Use of OHV's is discussed in the recreation sections of FEIS Chapters II, III, and IV Additional information for the various alternatives is available in the Forest planning records

TRAILS

COMMENT NO. 27: A corollary to the recreation site demand situation is the necessity for better dispersal of visitors in roaded natural settings, and also within the wilderness. The Region has more trail money available this year than ever before and the Umatilla needs its share—not to reconstruct the small mileage of existing trails, but rather to access more of the Forest by day-trail users

FOREST RESPONSE:

The amount of appropriated funds for trail maintenance and improvement has increased substantially in Fiscal Years 1987-89 in response to public interest expressed to the Congressional delegation. The Forest has submitted over 3 million dollars in the Regional Capital Investment Project (CIP) and requested that future maintenance funds be increased by almost 400 percent over Fiscal Year 1986 levels. The basic Forest approach to trail management is to improve the existing network to appropriate standards, build new connecting trails where necessary to complete loop routes, and then construct new trail routes. Getting the existing network upgraded and a few new connecting trails constructed, is expected to absorb available funding and management resources during this planning period New trail networks may be provided in the future to meet management objectives.

COMMENT NO. 28: We are concerned about the 3,400 miles of road construction proposed, which will eliminate many miles of existing trails. Alternative F would only construct 30 miles of trail per year, while eliminating an existing 270 miles of trails. The new trail construction mileage should reflect the demand for trail use and not have an upper limit. Where trails are necessarily impacted by harvest activity, they must be reconstructed or re-routed. The SCORP calls for nearly 10 times this much new trail mileage.

Demand figures from the 1987 Washington State OHV Plan do not include snowmobiles. The current need is for 190 miles of motorcycle trails, 98 miles of 4WD trails, and 22 miles of ATV trails. The ORV plan recommends projects be planned and constructed in the order of. (1) 4WD trails, (2) existing bike trails, and (3) new bike trails. All trails on the Forest should be protected from visual degradations associated with logging and road building.

FOREST RESPONSE:

The DEIS preferred alternative proposes constructing fewer than 1,800 miles of new roads The final Plan proposes about 1,650 miles of road construction. The most new road construction suggested under any alternative is slightly over 2,000 miles.

*Some trails will be lost. But, Forest-wide Standards and Guidelines for trails should help to prevent loss of any significant mileage of trails. In the DEIS, Alternatives **B, C, E, F, G,** and **K** were designed to retain or relocate existing trails (DEIS, Chapter II) and allow expansion to meet recreation objectives (IV-117); eliminating 270 miles of trail was not proposed in any alternative. The output schedules are not promises, but estimates of what may be produced under the Plan. The 30-mile estimate for construction is not an upper limit, and is intended to upgrade the existing network and provide new construction, especially to connect loops and improve trail opportunities. The final Plan proposes monitoring and enhancing the existing trail system, and constructing new trails.*

COMMENT NO. 29: The Plan should also discuss in more detail how conflicts between motorized and nonmotorized recreationists will be resolved

FOREST RESPONSE:

The general discussion about conflict in the Cumulative Effects portion of the Recreation section (Chapter IV) applies to motorized/nonmotorized users Conflict resolution is directly and indirectly involved in the entire planning process. Alternative selection, monitoring, mitigation measures, management area design and allocation, and standards and guidelines all serve to minimize and resolve conflicts (see FEIS, Chapter II) Although several mitigation measures and standards and guidelines in the Plan will minimize conflicts or expedite their resolution, a specific Forest-wide Standard and Guideline was added·

Priority will be placed on preventing conflicts by good communications and providing information to affected people. Indirect management actions (e g., design, education, information, etc.) will be preferred over direct actions (e.g., restrictions, enforcement, permits) Generally, recreation conflicts will be resolved in order of priority· (1) Public safety, (2) wise use of resources, (3) retention of or increased wide spectrum of opportunities, (4) prevention or filling of recreation opportunity voids, and (5) relation to the surrounding environment.

COMMENT NO. 30: A high level of funding is recommended for trail construction and maintenance, both within and outside wilderness. Emphasize greater use of uneven-aged timber management in popular recreation areas. Also use road closures to provide wildlife habitat security and a broader range of dispersed recreation opportunities.

FOREST RESPONSE:

These recommendations are in the Forest-wide Standards and Guidelines in Chapter 4 of the Forest Plan. A funding level is recommended in Appendix A of the Plan which is much higher than currently expended.

COMMENT NO. 31: The Lookingglass Trail is nice, but disappears in the bottom of the canyon. It should be constructed further down the canyon and over to Jubilee Lake Also, in the Texas Butte area, protect the recreation ridge trail from Copple Butte to Madison Butte.

FOREST RESPONSE:

Appendix A of the Forest Plan includes a listing of trails scheduled to be constructed or reconstructed (Lookingglass, including three bridges, is included). A project-level analysis is being conducted to determine trail needs for the Coalmine Hill/Madison Butte area.

COMMENT NO. 32: Can we work out an agreement every so often for a scout group seeking a service project to help with trail maintenance?

FOREST RESPONSE:

The Forest welcomes volunteer help and would be happy to arrange for trail projects Volunteer agreements can be made with citizens to protect them from tort claims and offer protection under the Workman's Compensation Act Please contact one of the ranger district offices or the Forest headquarters in Pendleton.

VISUAL

TIMBER HARVEST

COMMENT NO. 33: Middle-ground areas in partial retention will have only a 70-year rotation. It appears obvious that clearcutting these areas is planned (i.e., leave 3-5 target size trees/acre in both retention and partial retention foregrounds at time of final removal). "Mixed conifer stand regeneration in foregrounds and middle grounds will be planned for at least two species with no more than 65 percent of the stand in a single species." One would think that high-visibility areas would feature silvicultural principles sensitive to ecosystem maintenance, not logging efficiency.

FOREST RESPONSE·

Management areas with high concern for scenery will feature silvicultural prescriptions sensitive to public and ecosystem needs. Management Area strategies for A3, A4, and A5 in the FEIS (see Appendix D) were changed somewhat from the DEIS, but the basic concept remains unchanged—maintain an attractive landscape through vegetative manipulation Timber stands in viewsheds which have a partial retention Visual Quality Objective (VQO) will be managed with an extended rotation of 180 years; however, tree diameter and appearance will be more important than age Strong emphasis will be given

to uneven-aged timber management. First priority will be given to short-term visual effects, and second to long-term effects. Vegetative treatment is based on what is needed to meet the management objective, but logging practicality often must be considered for implementation

COMMENT NO. 34. The new Forest-wide Standards and Guidelines should be severely altered to provide more protection for visual resources. Management Areas A3 and A4 should be modified as follows:

a. The snag habitat should be at the 60 percent level.
b. There should not be any created openings in the foreground retention or partial retention areas.
c. Leave 10 target trees/acre at final removal.
d Limit the openings for vista purposes to a maximum of 100-foot and 200-foot openings/mile at any one time.
e. Uneven-aged management techniques should most often be employed.

FOREST RESPONSE:

Although final management area strategies for A3 and A4 were changed from the DEIS, the basic intent remains unchanged: A3 gives highest sensitivity to the visual resource while A4 gives average (NOT lowest) sensitivity Sensitivity Levels are a measure of people's concern for the scenic quality of the Forest. An overall intent in the FEIS allocation of management areas is to provide an increased amount of emphasis to a natural or near-natural appearing landscape

A part of the natural landscape, small created openings of size and shape common to the characteristic landscape will be used to meet long-term visual objectives such as increasing variety or changing species composition Use of uneven-aged management techniques is preferred for the visual management strategies. Small openings will be created using these techniques Many natural openings have isolated trees scattered across the area If created openings are shaped and sized to fit the land, 3-5 trees per acre are usually adequate to replicate openings which occur naturally. Areas of continuous, mostly uniform, forest exist which would be more attractive if there was a larger amount of visual diversity. Some attractive landscapes have limited viewing because of trees between the view and viewer. Creating openings in these types of areas and situations can benefit visual (and other) resources, and provide a more pleasing experience.

COMMENT NO. 35: The final Forest Plan should include an effective public information program, including signing, where timber management activities occur in "visually sensitive" areas, to let the public know why the activities are needed, what the project will accomplish, and how the area will look in the future. Reduced emphasis on clearcutting and greater reliance on uneven-aged management would further reduce the visual impacts of timber management, even on those lands not specifically allocated to visual quality management. It would seem especially appropriate on viewsheds.

FOREST RESPONSE:

Forest-wide Standards and Guidelines and Management Areas in the Forest Plan were changed to place much more emphasis on interpretation of natural resources and resource management activities. In response to public comments, timber management prescriptions will have a greater reliance on uneven-aged management in viewsheds, riparian areas, winter range, and other areas.

COMMENT NO 36: In the Plan on page 4-62, if a use area or travel corridor is termed a "sensitivity one" management unit, why is a 30-inch DBH tree the maximum allowable size class? Trees up to 60 inches or greater DBH are often common and create one of the prime recreation draws to the area.

FOREST RESPONSE

The target tree size is the minimum tree size, not the maximum The Forest expects to have trees larger than the target size where environmentally practical; they would be removed only for long-term visual benefits.

WILD AND SCENIC RIVERS

ELIGIBILITY AND CLASSIFICATION

COMMENT NO. 1: What is the rationale for the preferred recommendations? It is difficult to compare the various alternatives since no mention of this is made in Chapter II under each alternative except in a brief phrase on pages II-82 and III-83

FOREST RESPONSE:

Section VII of Appendix B of the FEIS, titled "Formulation of Alternatives," discusses the process used by the Forest to construct management alternatives This discussion includes statements about: (1) How alternative themes were established in order to resolve the Issues, Concerns, and Opportunities (ICO's) by providing a broad range of options regarding the future management of the Forest, and (2) how management areas such as A7 (Wild and Scenic Rivers) were developed and assigned to lands across the Forest in unique combinations that were designed to achieve the theme of each alternative. The themes are viewed in Chapter II, under "Alternatives Considered in Detail" and "Comparison of Alternatives." Finally, the Record of Decision presents the rationale for the selected alternative.

COMMENT NO. 2: Your discussion and analysis of Wild and Scenic Rivers (a little over one page!) on DEIS pages III-67 and III-68) is terribly inadequate in the depth and scope of information presented. The lack of information on wild rivers is a major flaw of your documents and must be corrected.

FOREST RESPONSE:

Page III-67 of the DEIS states, "A description of the river areas and a determination of the eligibility of the river sections are in Appendix G." The FEIS provides additional information in Chapter III and Appendix G.

COMMENT NO 3: The analysis in Appendix G of the DEIS should be revised to better document the eligibility/classification/suitability process for identifying potential Wild and Scenic Rivers. Refer to Section 8.2 of the Land and Resource Management Planning Handbook (FSH 1909.12) for details.

Although the Plan describes river features adequately, there is no determination of which resources meet the "outstandingly remarkable" standard necessary for a finding of eligibility. The suitability analysis, intended to weigh the costs and benefits of designation, is missing altogether.

FOREST RESPONSE:

Appendix G has been revised to include an introduction which explains the assessment of a study river's potential as a Wild and Scenic River Appendix G also identifies the "outstandingly remarkable" values for each study river. The need for a suitability analysis for those rivers identified as eligible through the land management planning process (see Table III-44, FEIS Chapter III) has been superseded by the Omnibus Oregon Wild and Scenic Rivers Act of 1988.

COMMENT NO. 4: There are several non-National Rivers Inventory rivers identified in the Pacific Northwest Rivers Study which lie wholly or partially on the lands of the Umatilla National Forest, and which appear to have values making them worthy of consideration as potential Wild and Scenic Rivers These rivers include the North and South Forks of the Wenaha River, the Umatilla River (North and South Forks), and Meacham Creek In the preparation of a final Forest Plan and FEIS, the Umatilla planners should utilize the information contained in the Pacific Northwest Rivers Study to evaluate other rivers on the Forest, including those mentioned above which received the highest ranking in several resource categories.

FOREST RESPONSE:

In the preparation of the Plan, various sources of information were referred to in order to determine whether or not there are any additional streams on the Forest which meet the criteria for Wild and Scenic

River status. The sources of information reviewed included the Pacific Northwest Rivers Study data bases for the States of Oregon and Washington, "Recreational Values on Oregon Rivers," "River Recreation in Washington," "Washington State Scenic River Assessment," and personal communication with the National Park Service in Seattle concerning the Nationwide Rivers Inventory.

Data bases for the Pacific Northwest Rivers Study recognize most streams in the States of Oregon and Washington; however, few of the information sources reviewed above identify values for those river segments within the boundaries of the Forest. and none provide "outstandingly remarkable" values when the segments are viewed in the context of the Walla Walla or Blue Mountain sections of the Columbia Plateau Physiographic Province.

While other river segments on the Forest may not be eligible for Wild and Scenic River status, their innate values will nonetheless be recognized through other management areas identified in Appendix D of the FEIS.

COMMENT NO. 5: Interim protection consistent with the USDA/USDI Guidelines and Chapter 8 of the Forest Service Planning Handbook should be established for those rivers found to meet the minimum eligibility criteria for inclusion in the national rivers system (i.e., are free flowing and possess one or more outstandingly remarkable values) until detailed suitability studies can be completed

FOREST RESPONSE:

The FEIS and Forest Plan provide for the protection of any eligible river on the Forest by establishing a special management area to protect the study river until a suitability study is carried out. This protection requirement is identified by Management Area A7 in Appendix D (Interim Management of Study Rivers), and in the introduction to Appendix G—Inventoried National Wild and Scenic Rivers (Determination of Suitability). However, currently there are no study rivers on the Forest.

COMMENT NO. 6: Forest Service decisions to manage potential Wild and Scenic Rivers for uses other than as components of the national rivers system (such as decisions releasing potential wilderness areas), irretrievably commit the resources of such rivers and their immediate environments, and require similar site-specific environmental analysis. The Umatilla draft Plan, however, fails to recommend well over half of the river miles found eligible for protection There is essentially no explanation or justification accompanying the disqualifications.

FOREST RESPONSE:

The Omnibus Oregon Wild and Scenic Rivers Act of 1988 has added those segments of the Grande Ronde, North Fork John Day, and Wenaha Rivers identified in Table III-44 to the National Wild and Scenic Rivers System.

The eligibility of other river segments is identified in Table III-44 and explained in the text accompanying the table. All eligible river segments on the Umatilla National Forest have been recognized in the Omnibus Oregon Wild and Scenic Rivers Act of 1988.

COMMENT NO. 7: The Grande Ronde and North Fork John Day recommendations should be dropped. Designating these rivers would: (1) Adversely affect management of privately-owned lands adjoining the rivers, and (2) possibly affect the availability of irrigation water as a result of minimum stream flow requirements.

FOREST RESPONSE:

The Omnibus Oregon Wild and Scenic Rivers Act of 1988 has added the segments of the Grande Ronde and the North Fork John Day rivers within the Umatilla National Forest to the National Wild and Scenic Rivers System.

Land uses and developments on private lands within a Wild and Scenic River area which were in existence when the river was designated may continue New land uses must be evaluated for their

compatibility with the purposes of the Act (Final Revised USDA-USDI Guidelines for Eligibility, Classification, and Management of River Areas).

"Designation of any stream or portion thereof as a National Wild, Scenic, or Recreational river area shall not be construed as a reservation of the waters of such streams for purposes other than those specified in this Act, or in quantities greater than necessary to accomplish these purposes" (Section 13 (c), Wild and Scenic Rivers Act) There are no specific requirements concerning minimum flows for an eligible river segment (FSH 1909.12, Chapter 8 21d).

COMMENT NO. 8: We are opposed to any more lands being owned by government, especially in regard to your scenic waterway proposals.

FOREST RESPONSE

The Secretary of the Interior and the Secretary of Agriculture are each authorized to acquire lands and interests in land within the authorized boundaries of any component of the National Wild and Scenic Rivers System, but they shall not acquire fee title to: (1) An average of more than 100 acres per mile on both sides of the river (Section 6(a) Wild and Scenic Rivers Act); or (2) any lands by condemnation, if 50 percent or more of the entire acreage within the river area is in government ownership (Section 6(b) Wild and Scenic Rivers Act).

MANAGEMENT AREA DIRECTION

COMMENT NO. 9: The standards contained in Management Area A7 (Wild and Scenic River Candidate) are inadequate for the protection of eligible Wild and Scenic River candidates Specifically, the standards in A7 are deficient in the following areas: They contain no specific language prohibiting water resource development, diversions, and other water course alterations, they contain no specific language regarding utility corridor placement, and they contain insufficient direction regarding timber harvest, mineral development, and road construction The final Plan should contain specific standards which adequately protect eligible river segments according to their classification.

FOREST RESPONSE

Additional language has been added to Forest-wide Standards and Guidelines and Management Area A7 in order to protect designated Wild and Scenic Rivers or Wild and Scenic River candidates. The additions are as follows:

Management Area A7

(1) Desired Future Condition — This new section is taken from: (A) Section 10(a) of the Wild and Scenic Rivers Act which identifies how each component of the system shall be administered; and (B) the Final Revised USDA-USDI Guidelines for Eligibility, Classification, and Management of Wild and Scenic River Areas, which supplements Section 2(b) of the Wild and Scenic Rivers Act, and states the criteria for classifying a river segment.

(2) Interim Management of Study Rivers — The new section is taken from FSH 1909 12 Chapter 8 12, and provides specific language to protect the free-flowing characteristics of identified rivers.

(3) Minerals — This addition is taken from Section 9(a)(iii) of the Wild and Scenic Rivers Act, and provides language withdrawing minerals from appropriation within 1/4 mile of the bank of any river designated a wild river.

(4) Timber — Uneven-aged management language has been added, and language concerning created openings has been dropped

(5) Transportation — This language is in conformance with the Final Revised Guidelines for Eligibility, Classification, and Management of Wild and Scenic River Areas

Standards and Guidelines (S&G's)

Another S&G has been added under "Land Uses—Utility and Transportation Corridors" which recognizes wild rivers as corridor exclusion areas and scenic and recreational rivers as corridor avoidance areas.

COMMENT NO. 10: We recommend that the Forest include all eligible stretches of rivers in the Forest Plan under the Management Area A8 designation and nominate those stretches for wild and scenic status. While riparian zones may have varying levels of protection under other management area designations, the A8 designation will act to protect all of the resources associated with riverine systems.

FOREST RESPONSE

Management Area A7 has been written to identify specifically with rivers qualifying for classification under the Wild and Scenic Rivers Act, and to protect the free-flowing condition and the water quality of these rivers. Management Area A8 has been written to protect or enhance the unique natural characteristics of landscapes noted for their scenic beauty, and does not focus on the river areas. It should be noted that area A8 is allocated to those lands in the Grande Ronde and Wenaha River canyons outside the area allocated to A7.

COMMENT NO. 11: The language under Recreation in Appendix D, page D-36, should be changed to read: Wild Classification—1. Manage areas for Primitive to Semi-primitive Nonmotorized (SPNM) setting. In Section 2, "Off-road (OHV) vehicle use is permitted..." must be removed entirely.

FOREST RESPONSE:

Normally, motorized use is not allowed in wild sectors The Management Area Standard and Guidelines are based on the provisions of the Wild and Scenic River Act which does not prohibit motorized use. Specific ROS ratings and OHV rules will be a part of the river management plans for each river, which will be appended to the Plan within 3 years

COMMENT NO. 12: Management areas bordering rivers and streams should emphasize maintenance of fisheries and riparian wildlife habitat. Additional buffers of C7, A1, or A8 Areas should be developed where appropriate, particularly along the Wenaha River corridor

FOREST RESPONSE

Management Areas C5 and C6 were developed to maintain or enhance water quality and to produce a high level of fish habitat by being applied to riparian areas Management Area C7 was designed to accomplish similar goals, but for watersheds. Additional areas such as A8, F2, and F4 permit no scheduled timber harvest and provide a high degree of water and soil protection to Forest riparian areas. Forest-wide Standards and Guidelines apply on the remaining riparian areas.

The Management Area Standards and Guidelines are applied to the alternatives The Wenaha River canyon is recommended for management under Management Areas B1 (Wilderness) and A7 (Wild River).

RESOURCE CONCERNS

COMMENT NO. 13: The river (Grande Ronde) is significant for recreation within the roadless area as well as downstream. However, according to page C-107, "another possibility would be that a dam could be constructed." Dams and other types of diversions and water impoundments have drowned many of the region's outstanding rivers. The Grande Ronde should not be one of them

FOREST RESPONSE:

The dam referred to on page C-107 of the DEIS was also referred to on page G-2 under Hydroelectric Potential, and related to an activity considered on the privately owned section within this river segment The river segment is now a designated Wild River and, therefore, Section 7 of the Wild and Scenic Rivers Act prevents this construction

COMMENT NO. 14: ORV (OHV) use should not be permitted in wild river corridors under any circumstances because such use is incompatible with the objectives of wild river management.

FOREST RESPONSE:

"Final Revised USDA-USDI Guidelines for Eligibility, Classification, and Management of Wild and Scenic River Areas," dated September 7, 1982, states that motorized travel on land or water is generally permitted in wild, scenic, and recreational river areas, but will be restricted or prohibited where necessary to protect the values for which the river area was designated. Management Area A7 follows these guidelines by permitting OHV use where it is not in conflict with river management objectives, but does not permit motorized use in the Grande Ronde, Wenaha, or the wilderness portion of the John Day river areas (or motorized watercraft on wild sections of Forest rivers).

COMMENT NO 15: Logging is completely inconsistent with the intent of Wild River designation and should be excised from your prescription

FOREST RESPONSE:

There is no scheduled timber harvest in Management Area A7, as stated in Appendix D of the FEIS. The cutting of trees will not be permitted except when needed in association with a primitive recreation experience (such as clearing for trails and protection of users) or to protect the environment (such as control of fire) Refer to FSH 1909.12 Chapter 8 2 and the Wild and Scenic Rivers Act.

SPECIAL INTEREST AREAS

MANAGEMENT STANDARDS AND GUIDELINES

COMMENT NO. 1: The lumping of management prescriptions for botanical special interest areas with those for geological, historical, or other types of SIA's is highly inappropriate This lumping has resulted in an extremely unwieldy and sometimes inappropriate set of Standards and Guidelines (S&G's) A distinctive and more restrictive set of S&G's for botanical areas should be developed for inclusion in the final Plan. Also, they should be listed as part of the description rather than under the Recreation section.

FOREST RESPONSE:

The Forest planning team decided it was more efficient to portray the management requirements for all special interest areas to the public in this manner than to make separate sections for each type because of their similar management intent and management standards. The documents are scheduled to remain in that format. In Appendix D of the FEIS and Chapter 4 of the Forest Plan, however, Management Area A9 direction has been revised to clarify management intent in the Desired Future Condition statement.

COMMENT NO. 2: The S&G's for recreational use should prohibit all but the least disruptive activities. The final Plan should implement formal and complete closure of special interest areas to any entry by ORV's (OHV's). Livestock grazing should not be permitted in botanical areas, or any other types of special interest areas Guidelines involving nonscheduled timber cutting should be more closely and rigidly controlled. All botanical areas should be recommended for immediate withdrawal from mineral entry. Roads and other ground-disturbing facilities and developments are completely inappropriate in botanical areas

FOREST RESPONSE:

Management that is, or is not, appropriate for each special interest area depends upon the reasons for creating each individual area in the first place. Management Area A9 direction states this intent in the Desired Future Condition section. For example, limited access and recreation use may be applicable to one area, while vehicle closure may be best in another. Providing interpretive signs and encouraging the public to observe native plants in their natural environment in one botanical area may be the reason for its creation in one case, but another one may have been created to preserve a very limited population and public use would be discouraged Management conditions need to be determined on an individual area basis

COMMENT NO. 3: The following sentence should be added to the botanical area S&G's on Plan pages 4-78 and 4-79. "There shall be no broadcast application of any chemical biocides on botanical areas

FOREST RESPONSE:

Management restrictions and mitigation measures that apply to managing competing and unwanted vegetation are specified near the beginning of Chapter IV of the FEIS (summarized from the Regional EIS). The Forest-wide Standards and Guidelines in the Pest Management section contain additional direction Among other things, the use of site-specific analysis is required for each project considering the use of herbicides There might never be a case where herbicide use would be considered within a botanical area. However, a noxious weed population could possibly invade a botanical area and pose a danger to the sensitive plant species located there In such a case, herbicide use could not even be considered if the language you propose were placed in the Forest-wide Standards and Guidelines

COMMENT NO. 4: The following statement should be added to the botanical area S&G's on Plan pages 4-77 and 4-78: "Prescribed fires and fuel treatments should be permitted, but only in consultation with, and under the approval of, the U S Fish and Wildlife Service and/or the Washington Natural Heritage Program or Oregon Natural Heritage Data Base biologists."

FOREST RESPONSE:

The requirement for consultation is included in the Forest-wide Standards and Guidelines (Threatened/Endangered/Sensitive Animals and Plants section). The requirement applies to all areas of the Forest, not just to Special Interest Areas.

COMMENT NO. 5: Plan pages 4-77 and 4-78 should state that all botanical areas will be designed for full "retention" as Forest Service property.

FOREST RESPONSE:

The Lands section of Management Area A9 does state the Forest direction to retain all Special Interest Areas in public ownership.

COMMENT NO. 6: The DEIS makes little attempt to assess the cumulative effects of the alternatives on botanical areas. The Forest should indicate what specific mitigation measures will be taken to assure that botanical areas are protected from cumulative degradation.

FOREST RESPONSE:

The cumulative effects and mitigation measures for botanical areas are found in the Unique Ecosystems section of Chapter IV of the FEIS and in Chapter 5 of the Forest Plan, and is also inherent in management area direction. While all resource interactions and consequences were analyzed during the planning process, NEPA requires that only those interactions termed "significant" be detailed in the planning document. The interdisciplinary team determined which resource interactions were "significant" and the Chapter IV discussions were tailored accordingly; the team believes special interest areas are adequately protected with existing standards and guidelines.

INVENTORY AND DESIGNATION

COMMENT NO. 7: Due to the extensive cutting of ponderosa pine on many portions of the Forest and adjacent lands, the Forest should make a major effort to identify and designate a sizeable ponderosa pine old growth botanical area

FOREST RESPONSE:

Old growth ponderosa pine areas have been identified and designated in the Forest Plan One Research Natural Area (Forks of Tamarack) has been created in a representative plant community type. An old growth ponderosa pine botanical area has not been created.

COMMENT NO. 8: Establishment of the seep in Sheep Creek as a special interest area or botanical area would help to provide long-term protection for the plant and animal assemblage.

FOREST RESPONSE

Sheep Creek has been designated as a Special Interest Area and included in the Forest Plan.

MANAGEMENT CONSIDERATIONS/MONITORING NEEDS

COMMENT NO. 9: The full acreages of all inventoried Research Natural Areas (RNA's) and botanical areas (BA's) should be designated and the management guidelines for these areas should be tightened up.

FOREST RESPONSE:

The acreages for all areas are detailed in Chapter III of the FEIS and Chapter 4 of the Forest Plan. Refer to Forest-wide Standards and Guidelines and individual management area descriptions for management guidelines (A9 and D2 in Appendix D of the FEIS and Chapter 4 of the Forest Plan)

COMMENT NO. 10: The location of botanical areas which contain sensitive plant species should not be marked on maps for public distribution, or otherwise advertised.

FOREST RESPONSE:

All management areas will be marked on maps for public distribution, including all special interest areas (of which botanical areas are only a part). The Desired Future Condition statement of Management Area A9 states the basic intention of providing a variety of unique opportunities for public use and enjoyment as long as the area and its special features remain in a substantially undisturbed condition. Individual area management plans will detail the management guidelines and levels of public use for that area

COMMENT NO. 11: The Forest should develop individual management plans for all botanical areas in order to address the specific resource concerns of each area These management plans should be structured like those developed for Research Natural Areas, but should specifically address the requirements of the species and habitats involved.

FOREST RESPONSE:

The Special Areas section of Chapter 4 of the Forest Plan states the requirement that management plans will be developed for Special Interest Areas. The development schedule is shown in Appendix A of the Forest Plan.

COMMENT NO. 12. Develop a clear and detailed plan of specific monitoring and mitigation procedures for the maintenance of native plant diversity and community structure, especially in botanical areas and other sensitive habitats.

FOREST RESPONSE:

A section has been added to the monitoring plan in Chapter 5 of the Forest Plan concerning special interest areas; it already includes monitoring requirements for sensitive plant species

WILDERNESS

WILDERNESS DESIGNATION

COMMENT NO. 1: Alternative F has a stated purpose (DEIS II-41) to "maintain all or parts of roadless areas that have apparent strong public interest, including those related to most of the grass-tree mosaic (GTM)." This confirms our thinking that grass-tree mosaic is no more than a surrogate for retaining unroaded lands for semi-primitive nonmotorized recreation and eventual re-review for wilderness classification. The maintenance of "future options such as the consideration of roadless areas for wilderness" (DEIS I-II) shouldn't be considered at all, after the repeated wilderness evaluations to which these areas have been subjected (with concomitant negative findings on suitability). Units of the national wilderness preservation system should be of such unique character as to be of national significance, in order to qualify for incorporation in the system.

FOREST RESPONSE:

Public comment shows that roadless areas can be (and should be) managed for a variety of uses and emphases. "Strong public interest" in roadless areas has been expressed in a variety of ways: In particular, responses to such issues, as wildlife, scenery, old growth, recreation opportunities, and timber volume, and even about specific roadless areas themselves. Several of the roadless areas containing GTM meet many of those interests. The intent of the C8 Management Area is to manage for wildlife values, visual quality, and soil and water protection; availability of semi-primitive recreation is a by-product of management emphasis. The Roadless section of Chapter I, and Appendix N of the FEIS summarize the interests, and Appendix C describes the attributes of the areas.

The release language in the recent wilderness act amendments require that multiple use of the areas not classified as wilderness be determined by the Forest Service according to NFMA. This determination is one purpose of forest planning The Forest Plan is to be updated at 10- to 15-year intervals which will allow reallocation of land according to the options available at the time in order to meet current demands and needs; therefore, roadless areas remaining unroaded in the planning period could be considered for wilderness classification in the future

RECREATION USE

COMMENT NO. 2: Use of the Wenaha-Tucannon Wilderness is presently quantified in the same order of magnitude as when first established, and the two North Fork wildernesses are down 57 percent from the time of establishment, according to the Regional Office Recreation Information Management (RIM) data. These data differ substantially from the 1985 Recreation Visitor Days (RVD's) of use presented in the DEIS (Table III-34).

FOREST RESPONSE:

The information on DEIS Table III-34 is the best the Forest has available. The RIM system is being revised, and the Forest and Region data may not be identical. The total amount of use in all three wildernesses decreased immediately after classification because motorized use, which was very popular, was eliminated. Since wilderness designation, total use has recovered in the Wenaha-Tucannon Motorized use has been displaced from the North Fork Umatilla and North Fork John Day, but quantities have not yet been replaced by wilderness users.

COMMENT NO. 3: Who came up with the figure of 12 for a group-size limit (proposed Plan, p. B-7)? Who authorizes parties of up to 30, and for what purpose? Limit the size of parties in wildernesses to six people and six animals. Furthermore, there should be a limit on the total number of horses in certain areas at certain times. Perhaps it is time for the use of "backcountry horse permits."

FOREST RESPONSE:

Current R-6 (national forests in Oregon and Washington) maximum levels for group size range from 6 people/9 head of stock to 12 people/18 head of stock, depending on wilderness resource spectrum

(WRS) objectives (see FSM 2322, R-6 Supp. 81). The standards may be modified based on individual wilderness situation analyses. Any group wishing to exceed the established group size would need a written permit from the District Ranger. The permit would be authorized only in situations where it could be demonstrated that wilderness values would be preserved.

COMMENT NO. 4: Intensify efforts to educate wilderness users by installing weatherproof brochure racks at popular trailheads such as the Umatilla Forks area. I suggest providing the brochure entitled "Evaluating Your No-Trace Camping Experience," or working with REI to provide their "Minimum Impact Camping" brochure.

FOREST RESPONSE:

The DEIS included direction for information and education contacts Additional emphasis on interpretation (including wilderness) has been added to the Forest-wide Standards and Guidelines in Chapter 4 of the Forest Plan. The Forest recognizes the need for better understanding (by managers and all wilderness users) of the Wilderness Act, wilderness management philosophy, and programs. Increased attention will be given to distributing brochures and other means of visitor contacts. Cooperation with other organizations will be sought and appreciated

TRAIL MAINTENANCE

COMMENT NO. 5: My observations show trail maintenance in disarray. Is maintenance of the trails in wilderness desired?

FOREST RESPONSE:

Trail maintenance in wilderness is definitely desired. In the Forest Plan, trail maintenance will emphasize the wilderness experience, and the soil and trail resource. Trails in wilderness should be primitive, and managed to fit into the natural landscape as unobtrusively as possible. The trails should generally provide opportunities for isolation, independence, self-reliance, etc., in an environment which offers challenge and risk. Wilderness trails should be constructed and maintained to more- and most-difficult standards. Management objectives for each trail are outlined in individual trail management and wilderness project plans (see FSM 2320).

RESOURCE CONCERNS

COMMENT NO. 6: We request the Forest adopt a policy prohibiting off-road vehicles (OHV) from all trails leading into established wildernesses ORV (OHV) violation of wilderness boundaries is a serious and rapidly-growing problem.

FOREST RESPONSE:

Prohibition of OHV (off-highway vehicle) use is based on site-specific situations. If significant safety problems, user conflicts, or resource damage occur on wilderness access trails, prohibition of OHV's is one option; however, other indirect solutions are preferable, if practicable

COMMENT NO. 7: We believe the Forest should adopt a Forest-wide policy of nonrenewal and cancellation of those livestock grazing permits granted prior to wilderness designation upon their expiration, sale, trade, or inactivity.

FOREST RESPONSE:

Section 4 of the Wilderness Act of 1964 states that "the grazing of livestock, where established prior to the effective date of this Act, shall be permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary of Agriculture; any adjustments in the numbers of livestock permitted to graze in wilderness areas should be made as a result of revisions in the normal grazing and land management planning and policy-setting process, giving consideration to legal mandates,

range condition, and the protection of the range resource from deterioration." Thus the Umatilla National Forest does not have the authority to adopt a broadscale policy of nonrenewal and cancellation of livestock grazing permits in wildernesses.

Livestock grazing on national forest land is authorized by a written grazing permit for an allotment over a period not to exceed 10 years. Allotment management plans for allotments within wilderness contain objectives for management of the wilderness resource. If all terms and conditions of the grazing permit are being met (including all allotment management objectives), permits are reissued for additional 10-year periods. However, once a grazing permit is waived back to the United States Government (grazing use has ceased in the allotment under the terms of that individual grazing permit), it has been general practice not to issue another grazing permit to a qualified permit applicant. Several allotments within wildernesses on the Forest have become vacant in the last several years; there are currently four vacant allotments within the three wildernesses on the Umatilla National Forest

ROADLESS AREAS

DEFINITION

COMMENT NO. 1: Provide a definition of roadless area consistent with Forest Service policy.

FOREST RESPONSE:

The introduction to Appendix C of the FEIS presents definitions, direction, and guidelines for identifying roadless areas. The definition has remained constant since it was originally stated by former USFS Chief McGuire in 1977.

COMMENT NO. 2: Identify the roads that should be closed to retain the wild character of some of the roadless areas.

FOREST RESPONSE:

The definition in the introduction to Appendix C of the FEIS identify roadless areas as areas that do not have improved roads maintained for travel by motorized vehicles intended for highway use. This definition was used in the Forest identification of roadless areas. In other words, roadless areas do not have roads, so road closures do not apply.

COMMENT NO. 3: The discussion of roadless areas should include road maps showing the existing roadways and trails, along with a historical analysis of previous timber management activities.

FOREST RESPONSE:

Appendix C provides a topographic map of each area that indicates roads, trails, and timber management activities in the vicinity of the roadless area.

RATIONALE FOR ALLOCATION

COMMENT NO. 4: The decision to leave lands roadless is a major management decision with environmental implications that must be fully described in the EIS. The Plan fails to provide the rationale for deciding whether or not a roadless area should remain roadless.

FOREST RESPONSE:

Management of the identified roadless areas on the Forest is one of the nine public issues identified in the Plan and tracked throughout the planning documents Allocations of roadless areas are displayed in Chapter II of the FEIS. The environmental consequences of the alternatives for the roadless areas in general are described in Chapter IV, and the consequences for specific roadless areas are found in Appendix C. In addition, specific rationale for retaining or developing each roadless area is found in the Record of Decision.

COMMENT NO. 5: Readability of the EIS suffers when too much of a substantive discussion is placed in an Appendix. The roadless areas discussed are an example.

FOREST RESPONSE:

In the body of the FEIS, the issues, analyses, and alternative ways of managing currently unroaded areas are presented by treating the areas as resources (or land uses) for the Forest as a whole Appendix C reports the description, alternate management, and site-specific consequences for each particular roadless area. It was felt that the readability was improved by placing detailed discussions in the Appendices

COMMENT NO. 6: It was quite disappointing to see that no current roadless areas were placed under Management Areas A1 or A2

FOREST RESPONSE:

The Forest Plan has allocated portions of six roadless areas (Upper Tucannon, Wenatchee Creek, Spangler, Lookingglass, and RARE II's Hells Half Acre) to Management Areas A1 and A2

SIZE AND LOCATION

COMMENT NO. 7: Since 1979, nearly half of the Forest roadless areas have been destroyed by timber sales. The draft Plan proposes to road or develop over 50 percent of the areas that currently remain. Over 80 percent of the Forest has already been roaded and logged.

FOREST RESPONSE:

In 1979, RARE II was completed, the Wenaha-Tucannon Wilderness had been established the previous year, and 538,700 acres remained roadless in 33 areas on the Umatilla National Forest.

In 1984, the North Fork Umatilla and North Fork John Day wilderness areas (totaling 127,000 acres) were established from the North Fork Umatilla and North Fork John Day roadless areas and parts of the Tower and Greenhorn Mountain roadless areas. Nine of the remaining 31 roadless areas (10,000 acres or smaller in size) now have fewer than 5,000 roadless acres remaining, and have been removed from the Forest list, while other areas have also incurred timber harvest activity and been reduced in size These reductions total 100,000 acres (see Appendix C of the FEIS).

The 22 nonwilderness roadless areas identified in the Forest Plan contain 281,100 acres (20 0 percent of the Forest) Adding these areas to the three wilderness areas on the Forest which contain 304,400 acres (21.7 percent of the Forest), we get a total of 585,500 acres, or 41.8 percent of the Forest. This is the percentage of the Umatilla National Forest that is presently in undeveloped classifications.

The Forest Plan permits the development of 5 roadless areas and parts of 11 others Management areas assigned to roadless areas, which schedule timber harvest, are identified in Chapter II of the FEIS under the selected alternative and in Appendix C.

COMMENT NO. 8: Indicate acreages of each roadless area. Provide a map showing areas of proposed development. Identify those areas where helicopter systems can be used to reduce or eliminate new road construction.

FOREST RESPONSE:

Acreages for each roadless area can be found in Appendix C of the FEIS A map of an area proposed for development is drawn as part of a timber sale packet at the time the sale is proposed Timber sales proposed for roadless areas during the next 5 years were identified in Appendix A, Table A-8, of the draft Plan. Helicopters can be used to harvest timber up to a distance of 1 mile However, this distance may be reduced by factors such as elevation and yarding direction.

COMMENT NO. 9: Clarify exactly how much of the Forest roadless area will remain undeveloped.

FOREST RESPONSE:

The Forest Plan makes the assumption that those roadless areas or portions of roadless areas that are portrayed as being developed for the selected alternative in FEIS (Chapter II) and Forest Plan (Chapter 4) and on the Forest Plan map will be developed by the end of the 10- to 15-year planning period. Development should be interpreted as not leaving a manageable unit of 5,000 or more acres in an unroaded condition. All of 6 roadless areas and parts of 11 others will remain undeveloped.

TIMBER HARVEST

COMMENT NO. 10: The draft Plan (Page 3-4) states that "roadless areas can be managed to provide wood products, certain wildlife habitats...." How can wood products be utilized without roads?

FOREST RESPONSE:

When taken in context, this paragraph explains that roadless areas can be developed to provide wood products, certain wildlife habitats, and recreation opportunities through vegetation management and road construction; or they can provide other recreation and wildlife values, high water quality, and native fish populations by being retained in a roadless condition.

COMMENT NO. 11: It is highly questionable to treat forestry opportunities on productive timber land as a residual from which provisions for all other resource values are first deducted.

FOREST RESPONSE:

Forestry opportunities are numerous and exist on many sites. The opportunity to realize many other resource values—such as wild and scenic rivers, research natural areas, special areas, scenic areas, etc.—is much more limited. If other resource values require forested sites, they must be realized where they occur if they are to be realized at all. For many people, the national forests are also the only places where primitive recreation, natural mountain scenery, various species of plants and wildlife, and solitude and peacefulness, can be enjoyed.

COMMENT NO. 12: It is unlikely that any of the most productive timber-growing sites on the Forest (those sites producing 85-100 cubic feet per acre per year), will be found in the Forest's roadless areas.

FOREST RESPONSE:

The most productive plant communities found on the Forest are the three white fir plant communities (cubic feet per acre per year are 115 for White fir-twinflower, 79 for White fir-big huckleberry, and 59 for White fir-grouse huckleberry). Table III-3 on page III-8 of the DEIS (and Table III-5 of the FEIS) presents Forest acres by plant community types. The table indicates the first two plant communities together make up about 22 percent of the Forest (11.3 and 10.5 percent respectively). All three communities make up about 28.5 percent of the Forest roadless areas.

COMMENT NO. 13: Suitable and operationally-feasible high-site timberlands, located at the upper end of several side drainages of the Grande Ronde Roadless Area, should be included in a management area that permits timber harvest.

FOREST RESPONSE:

Several small areas in the upper end of Sheep and Bear creeks are allocated for Management Area C4 (Wildlife Habitat) which permits scheduled timber harvest. Refer to the Forest Plan map for management area boundary locations.

MINERALS

COMMENT NO. 14: Minerals and oil and gas leasing are poor reasons to exclude a roadless area from protective designation.

FOREST RESPONSE:

Neither minerals nor oil and gas leasing were used as reasons to exclude a roadless area from being retained as a roadless area in any alternative.

COMMENT NO. 15: The discussion of roadless areas should include the mineral potential of each area.

FOREST RESPONSE:

A more complete description of the mineral potential of each roadless area has been included in Appendix C of the FEIS.

RECREATION USE

COMMENT NO. 16: Your assessment on page III-57 of the DEIS that users will either find satisfaction in roaded areas or be displaced elsewhere if traditional semi-primitive opportunities are dramatically changed is wrong. Most people are not willing to replace a roadless area experience with a roaded one.

FOREST RESPONSE:

The referenced page identifies what is expected to happen in the future as the demand for primitive and semi-primitive recreation continues to rise and the amount of unroaded setting decreases If demands are to be met, future Forest users will have to be willing either to accept the changes as they occur in the roadless area where they recreate, or to pursue their type of recreation in another roadless area.

COMMENT NO. 17: Roadless areas discriminate against both the aged and the handicapped.

FOREST RESPONSE:

The Forest Plan has allocated the majority of the Forest to management areas which are accessible by motor vehicles. Areas of land, regardless of size, which are retained in a roadless condition are so designated in order to retain or protect sensitive resource values.

DE FACTO WILDERNESS

COMMENT NO. 18: The Oregon and Washington Wilderness Acts of 1984 opened the remaining roadless areas to multiple-use management Establishment of de facto wilderness areas through semi-primitive recreation allocations in national forest plans violates both the spirit and principle of the release language included in these Acts.

FOREST RESPONSE:

The 1984 Oregon and Washington Wilderness Acts do not mandate that multiple use be translated as the roading and harvest of timber in all the remaining roadless areas. Rather, they mandate that multiple use will be determined by the forest plans, pursuant to National Forest Management Act of 1976 (NFMA). The definition for multiple use provided by the NFMA has been included in the introduction to Appendix C of the FEIS, and encompasses all types of uses, including semi-primitive recreation and other management areas stated in Appendix D.

COMMENT NO. 19: Nonmotorized, semi-primitive management of roadless areas lying adjacent to designated wildernesses creates an illegal de facto wilderness buffer zone.

FOREST RESPONSE:

Portions of the Upper Tucannon and W-T Three roadless areas, and all of the Greenhorn Mountain roadless area, are allocated to management areas for nonmotorized dispersed recreation, wild river, and scenic area respectively.

Even though the three areas lie adjacent to existing wilderness areas, their management area allocations were dictated by resource considerations and issue resolution, and not by their spatial location or the need to buffer the wilderness areas.

Parts of Spangler, Walla Walla River, Wenatchee Creek, Hellhole, and Mill Creek Watershed roadless areas are allocated to management areas that will maintain each area's semi-primitive status. However, only the Wenatchee Creek and Mill Creek Watershed areas will remain nonmotorized. In addition, all of the areas are separated from an existing wilderness area by an arterial Forest road

COMMENT NO. 20: The draft Plan did not allocate any of the undeveloped "released " lands specifically to management for semiprimitive roadless recreation.

FOREST RESPONSE:

As stated on page 2-41 of the draft Plan, the preferred alternative provided semi-primitive recreation opportunities in roadless areas through the allocation of three scenic areas (totaling about 29,000 acres) and seven other areas managed in an unroaded condition (totaling about 81,000 acres). In addition, six dispersed recreation areas with semi-primitive opportunities (three nonmotorized and three motorized), have been added to the Forest Plan.

COMMENT NO. 21: The few roadless areas that remain on the public lands represent a unique resource that once lost can never be replaced. At a minimum, the areas that adjoin existing wilderness should be preserved.

FOREST RESPONSE:

Congress stated in both the Oregon Wilderness Act of 1984 (Section 6) and the Washington State Wilderness Act of 1984 (Section 9) that they did not intend designation of wilderness areas to lead to the creation of protective perimeters or buffer zones around each wilderness area They further stated that even if nonwilderness activities or uses can be seen or heard from areas within the wilderness, that fact shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area.

OTHER RESOURCE CONCERNS

COMMENT NO. 22: Roadless areas retained for semi-primitive recreation will be overly concentrated in the grass-tree mosaic management areas.

FOREST RESPONSE:

Management area allocation of roadless areas has changed since the draft Plan was issued. Now, of the 16 roadless areas retained in an undeveloped condition (all or partly) by the Forest Plan, 6 contain the grass-tree mosaic management area, 5 contain dispersed recreation management areas, 4 involve scenic areas, and 2 involve watershed strategies

COMMENT NO. 23: All roadless areas should be closed to any entry by ORV's.

FOREST RESPONSE:

Of the 16 roadless areas identified in the previous response, 8 are closed to off-highway vehicle (OHV) use, in support of dispersed nonmotorized recreation, scenic areas, and the Mill Creek Municipal Watershed. OHV use is permitted in the other nine areas, but will normally be restricted to designated trails and roads

COMMENT NO. 24: Significant and high-quality wild land values are ignored or minimized in Appendix C. All roadless areas should receive botanical inventories.

FOREST RESPONSE:

Appendix C of the FEIS attempts to convey to the reader the known attributes and resource values of the roadless areas. Sensitive plant surveys have been done annually on this Forest for many years and

will be continued until all the Forest has been surveyed. The surveys precede project activities. Therefore, roadless areas will be among the last areas on the Forest to be reviewed, as a general rule.

COMMENT NO. 25: It would probably be more accurate for the DEIS to state that those alternatives which propose the greatest amount of roadless management would run the greatest risk of large destructive wildfires and water quality degradation.

FOREST RESPONSE:

Large areas of unroaded land do lack the access needed to quickly reach fires with firefighting equipment; however, this lack of vehicle access will reduce the hazard of many man-caused fires.

There is no doubt that large fires do cause great quantities of ash and (potentially) soil to reach watercourses, but degradation of water quality has many causes—chief among them are road construction and timber harvest.

SPECIFIC AREAS

COMMENT NO. 26: The final Plan for the Forest should reflect an aggressive commitment to emphasize recreation rather than clearcutting. Bald Mountain-Cutsforth Park near Heppner should be set aside as a roadless addition. Besides maintaining the currently existing trailbike paths and expanding the trail system, it would enhance opportunities for river kayaking and rafting.

FOREST RESPONSE:

The Forest Plan includes an A1 Management Area in the Bald Mountain-Cutsforth Park area A project environmental analysis is being conducted to determine an appropriate trail network for the area Willow Creek is not suitable for kayaking or rafting within the Forest boundary.

COMMENT NO. 27: The Hellhole Roadless Area should be enlarged to include more area in the South Fork Umatilla and Shimmiehorn Canyons, and also areas around Farley Spring, Thimbleberry Mountain, and Huckleberry Mountain.

FOREST RESPONSE:

All roadless areas were delineated using the definitions, direction, and guidelines stated in the introduction to Appendix C of the FEIS. The topographic map of the Hellhole roadless area identifies all of the area which meets this criteria The Forest Plan has allocated additional area to Management Area C8 (Grass-Tree Mosaic) in the Huckleberry Mountain and Thimbleberry Mountain areas.

COMMENT NO. 28: Why has the south half of Eagle Creek drainage not been included in the Lookingglass Roadless Area?

FOREST RESPONSE:

The slopes on the south side of Eagle Creek are within the boundaries of the Eagle Cabin Timber Sale which is currently active.

INDIAN TREATY RIGHTS

TREATY RIGHTS

COMMENT NO. 1: Federal trust responsibility to protect the treaty rights and the opportunity to exercise them extends throughout the entire forest.

FOREST RESPONSE:

The Forest recognizes its responsibilities relative to protecting treaty rights and discusses them in FEIS Chapters III and IV and in Appendix F Figure III-P also shows the relationship of the Forest to both reservation and ceded boundaries.

COMMENT NO. 2: The notion that the tribes' interests in riparian areas, fish habitat, and high quality water are "amenity oriented" is an inaccurate description that fails to consider the economic and cultural significance of the Forest resources to the tribes. The Forest Service should clearly discuss the cultural and economic importance of fisheries to Native Americans in the Columbia Basin.

FOREST RESPONSE:

The Plan clearly points out (Chapter 2, pp. 2-5, 2-6, and other locations) the importance of the Umatilla National Forest as a special place of traditional activities that have religious and spiritual significance to many tribal members. The cultural and economic aspects of fisheries are addressed in several places in Chapter IV and are also covered in Table III-48.

COMMENT NO. 3. "The economic well-being and lifestyles of people in the 10-county area of influence can be affected by products and services from the Forest The availability of wood fiber, forage, quality water, and recreation provided by the Forest will affect economic activity and lifestyles in the local community" (proposed Plan, p. 3-7). The Forest then proceeds to describe the interests concerned with this issue, in terms of development-oriented interests and amenity-oriented interests The interests of the tribes in enhancing their treaty-protected fishery, both on the Forest and in Zone 6, were not considered even though the Forest identified "the CTUIR and other Indian people" as part of the affected society.

FOREST RESPONSE:

The tribes' interests in fisheries and their management has been recognized early and throughout the entire planning process. Riparian management has been identified as an issue, and fish management is discussed as an important management concern. The purpose of the planning process is to resolve the identified issues and address each concern; therefore, each issue and concern is tracked through the process to resolution in the FEIS.

Enhancing riparian and anadromous fish resources is recognized and addressed throughout the FEIS documents. Chapter I discusses identified issues and concerns; Chapter III covers fish and riparian background and related topics; Chapter II reviews proposed direction and management and expected fish increases in the alternatives; and Chapter IV describes the consequences of the alternatives The discussion covering the relationship of increased anadromous fish production from the Forest to the lifestyles of those using this resource has been expanded in Chapter IV. The final Plan represents a strong Forest commitment to both riparian protection and fisheries' management as shown in Forest goals and objectives, direction in standards and guidelines and management areas, other mitigation measures, and the fisheries' enhancement program.

COMMENT NO. 4: The proposed indicators used to evaluate the effects of Forest management on the economic and social needs of the affected society (jobs, personal income, payment to counties, and Present Net Value) are totally inadequate to evaluate the effects of Forest management on the tribes Furthermore, the Forest description of the socioeconomic issue presents an unbalanced analysis of the social, cultural, and financial effects of Forest management on the tribes, and indeed, on all of society.

FOREST RESPONSE:

Issues of economic and social importance to the tribes (and others) have also been recognized in the Socioeconomic section of Chapter I. The intention of the economic and social indicators is to allow a comparison of the various alternatives Obviously, other indicators describing social and economic effects may have been used. These indicators are only one measure of the effect of the Plan on the tribes. Indicators for response to the riparian, water, big game, and other issues of concern to the tribes have also been covered and described.

Each of the issues has been "tracked" through the entire planning process to resolution. A response to the issues is displayed in Chapter II. FEIS Chapter IV provides social, cultural, and financial consequences of the alternatives, and includes discussion of the effects of resource management on the tribes.

COMMENT NO. 5: How much will natural resource values and treaty rights be compromised by this Plan in the name of short-term "commodity economics"? The political and improper use of the term "community stability" for short-term corporate gain is not an acceptable reasoning to compromise the long-term sustained yield of the diversity of values available on the Forest.

FOREST RESPONSE:

The intent of the Plan is to maintain or enhance natural resource values and maintain the diversity of values produced on the Forest over time. The Plan also recognizes and provides direction to ensure that treaty rights are met (Human Resources Standards and Guidelines) It is recognized that tradeoffs between resources will occur (see discussion in Chapter I) These are displayed throughout Chapters II and IV of the FEIS. However, there is no direction in the Plan to trade off basic resource values to maintain community stability.

RESOURCES OF CONCERN

COMMENT NO. 6: The draft Plan contains contradictory statements as to how archeological sites will be protected. On page 4-4, the Forest states that when there is a conflict with "other resource needs" it will carry out "data recovery operations." Later the Plan states, "applicable cultural resource protection measures include data recovery plans, site treatment plans, physical protection, patrols and site visitations, signing, integrated resource management programs, minimum site identification, public education, and area or site closures" (draft Plan at 4-41). The Forest Service needs to clarify whether its management approach for archeological sites will emphasize salvage or onsite protection of cultural resources

FOREST RESPONSE:

The National Historic Preservation Act of 1966 (as amended) requires that the Forest locate and protect cultural properties which are eligible for inclusion in the National Register of Historic Places. Chapter III of the Plan and the Forest-wide Standards and Guidelines state that the Forest will be in full compliance with the law. Sites will be identified and protected in place except when this is not possible due to project design Only in those cases when project redesign is not possible will the information from sites be collected in an approved manner so that information is not lost.

COMMENT NO. 7: The American Indian Religious Freedom Act establishes as Federal policy a goal to protect and preserve for American Indians their access to religious sites on Federal lands. The Forest Plan does not identify where these practices occur or how the Forest Plan will mitigate Forest management activities which interfere with or impair these religious activities

FOREST RESPONSE:

Forest-wide Standards and Guidelines (Chapter 4 of the Plan, Community Development and Human Resources No. 7, and FEIS Appendix D) provide that the Forest will be fully in compliance with the American Indian Religious Freedom Act. It further states that management of these areas will be coordinated with the leaders of the Nez Perce Tribe, Confederated Tribes of the Umatilla Indian

Reservation (CTUIR), and the Confederated Tribes of the Warm Springs Indian Reservation of Oregon. Chapter III of the FEIS (Cultural section) indicates that not enough information is available to identify these sites at this time The intent of the Forest is to execute Memorandums of Agreement with the individual tribes in order to facilitate identification and protection of areas of religious importance.

COMMENT NO. 8: Native American sites that may be categorized by the Umatilla National Forest into the A9 Management Area (Special Interest Area) should be coordinated with the CTUIR first.

FOREST RESPONSE:

At this time, no Native American sites in the Plan are included in the A9 strategy The Forest will fully coordinate with the tribes on this matter, if the opportunity arises in the future.

COMMENT NO. 9: Marginal stumpage rate sales and subsidized roads are preempting the potential annual value outputs for tribal subsistence hunting and fishing.

COMMENT NO. 10: In the context of Forest management, unless the Forest Service can demonstrate that the tribes' treaty rights are presently being fulfilled, it cannot justify approving activities in the Forest that will cause further degradation of anadromous fish habitat

FOREST RESPONSE:

Umatilla National Forest records indicate (in Chapter III of FEIS) that 1982 was the only year where the Forest did not show a positive return in timber receipts relative to expenditures In any case, the point being raised is whether or not roads and timber harvest activities are preempting potential annual outputs for tribal hunting and fishing rights. The Forest has goals and objectives in the Plan (and emphasized management) to maintain and improve big game habitat and enhance fish resource Throughout the process, the Forest addressed the issue of timber and roads' effects on big game and fish and described them in FEIS Chapter IV.

The Forest recognizes the value of timber harvest in enhancing big game habitat and at the same time recognizes the potential negative effects Maintenance or improvement of big game habitat is provided for in management area direction and Forest-wide Standards and Guidelines of the Plan. Prescriptions for management of big game summer and winter ranges, roads, forage, and effects on private lands are designed to use timber harvest in some cases and limit harvest and roads in others, all in an effort to at least maintain big game. The intent of this direction (in the case of big game) is to provide habitat to support elk and deer populations at or near (within 10 percent) state population management objectives Through this direction, tribal hunting opportunities will be maintained or enhanced.

The Forest has also placed a high emphasis on production of anadromous fish Implementation of any of the alternatives described in the Forest Plan will result in a significant increase in the production of anadromous fish. Management Areas C7 and C5 have been constructed to afford special emphasis to riparian areas and fish production. Standards and guidelines have also been developed to insure protection and management of anadromous fish habitat. Additionally, the Forest will continue to implement an aggressive fish habitat enhancement program These activities will combine to produce a steadily increasing habitat capability that will result in over 2 1/2 times the present potential by decade 5 as prescribed in the Plan (see Tables II-6A and II-8 in FEIS).

COMMENT NO 11: Tribal members are losing their traditional hunting areas in numerous places on the Forest due to a simple lack of quality habitat that big game can effectively utilize The CTUIR contends that when a traditional hunting area on the UNF is displaced of big game by virtue of Forest management impacts then the opportunity to exercise the treaty right in that area is respectively diminished, and a de facto abrogation of the federal trust responsibility exists

FOREST RESPONSE·

The Forest has developed objectives in the management strategies that address the amount of change that can occur in the habitat "quality" of a given management area and allocation zone. These standards deal primarily with retention of specified levels of big game cover and road density, as they interact in

the habitat effectiveness model for elk. The principle intent of these guidelines is to minimize displacement of elk, even in those areas with an emphasis on commodity production In the Plan, several other management strategies such as A1, A2, A8, C3, C3A, C8, B1, F4, F2, C7, and C4 will have low to very-low levels of disturbance and will provide quality habitat for big game. Alternative programs are addressed in FEIS Chapter II and Chapter 2 of the Forest Plan; the effects of the alternatives on big game (including the selected) are described in FEIS Chapter IV. The opportunities of the tribes to exercise treaty rights under given alternatives are also shown in FEIS Chapter IV

COMMENT NO. 12: Forest travel management planning regarding reservation lands adjacent to the UNF should be coordinated through the CTUIR.

FOREST RESPONSE.

Access management plans will be developed for each ranger district on the Forest as part of Plan implementation (see schedule for completion of implementation plans in Appendix A of the Plan). The plans will be closely coordinated with the CTUIR as well as other interested members of the public. The relationship of the these plans to adjacent reservation land will be addressed at that time

COMMENT NO. 13: "The CTUIR, ODFW, and the Forest are currently working to restore Chinook salmon runs in the Umatilla basin." This is only partially true (see proposed Plan, page 2-13)

FOREST RESPONSE:

The Bureau of Reclamation and the Bonneville Power Administration have also been included in this statement

COMMENT NO. 14: Fish, game, and roots and berries were and still are critical resources to the tribes. Any qualification of this fact should come from the tribes, not the Forest Service

FOREST RESPONSE.

Recognition of the importance of these resources is covered in Chapter III (Table III-48), Chapter IV of the DEIS, and in Chapter 2 of the Forest Plan.

COMMENT NO. 15: The DEIS states on page III-79 that "fish were a secondary food in this area but the social and ceremonial importance of fish, primarily salmon, continues. Hunting was never as important as fishing and plant gathering in terms of the amount of food provided." This is not consistent with Barbara Lane's "Traditional Fisheries of the Walla Walla, Cayuse, and Umatilla" which states: "The food for all these people consisted primarily of fish, game, roots, and berries. For the Cayuse, Umatilla, and Walla Walla, salmon was the food staple...(Other anadromous and fresh water fish were important)...Decimation of game and destruction of root crops also altered the traditional patterns of seasonal movements which the people made in order to harvest resources in different locales."

FOREST RESPONSE:

The statement on page III-79 was based upon several statements presented in "Oregon Indians—Culture, History & Current Affairs" (Zucker, Hummel, and Hogfoss 1983). Under the heading of major food resources, page 16 states that no food resource was dominant in the plateau culture area Nevertheless, the Forest Plan defers to the Indian people and has identified salmon, instead of wild plants, as the traditional staple food of the tribes.

COMMENT NO. 16: The Nez Perce have a treaty grazing right on these lands The right is unconditional, although limited to horses and cattle. The Forest Service makes no provision in its Plan for such a contingency. The Forest Service must acknowledge its responsibility to provide for Nez Perce grazing rights and must come up with plans to deal with tribal members' requests to exercise their grazing rights.

FOREST RESPONSE:

The Nez Perce right to graze on Forest land is recognized in Appendix F Chapter IV of the FEIS has also been modified to include the right of the Nez Perce to graze upon ceded national forest lands.

COMMENT NO. 17: Primitive and semi-primitive opportunities are important to the tribes, not just for recreation but for cultural reasons as well.

FOREST RESPONSE:

The importance of the Forest and its resources to the tribes (including primitive and semi-primitive opportunities) is recognized and discussed in FEIS Chapter III (including Table III-48) and Plan Chapter 2.

COORDINATION

COMMENT NO. 18: Forest-wide standards, Best Management Practices, monitoring plans, riparian area protection and enhancement guidelines, elk habitat effectiveness models, transportation plans, and snag management vary considerably from forest to forest in the Blue Mountain region. The inconsistency does not appropriately address consistent treaty rights and other Federal laws pertaining to this region; these need to be addressed on both a tri-Forest (UNF, MNF, & WWNF) and regional level.

FOREST RESPONSE:

A concerted effort has since been made by the Regional Office and the Umatilla, Wallowa-Whitman, and Malheur National Forests to achieve consistency on key aspects of the respective forest plans Specifically, the Regional Office guidance has focused on elk habitat modeling, access, winter ranges, snag, and fish and riparian management The forests have had several formal meetings as well as numerous informal contacts to address consistency and resolve the issues. An additional point that needs to be recognized is that some on-the-ground differences exist in resource situations between the northeast Oregon forests, as well as differences in local social and economic conditions. These differences have, in some cases, resulted in different issues for the respective forests to deal with and necessitated different approaches to dealing with the issues Even though the northeast Oregon forest plans have differences, each forest plan is designed to (and will) meet identified treaty obligations.

COMMENT NO. 19: The Forest cannot neglect its duty to consult with the tribes regarding fish and wildlife management.

COMMENT NO. 20. There is an obvious need for the UNF to address the elk habitat effectiveness subject on a cooperative agreement basis with the tribes.
FOREST RESPONSE:

The Forest recognizes no advantage to singling out a particular resource area (i e, elk habitat management) and developing a cooperative agreement for it The Forest planning process, area analysis, and site-specific projects all provide opportunities for effective input concerning elk management on the Forest.

The Forest recognizes and takes seriously its responsibility to work closely with the tribes, and there is ample statutory and policy direction to do so on matters relating to fish, wildlife, and other management on the Umatilla National Forest (see Appendix F and standards and guidelines). The Forest has worked closely with the tribes during preparation of the Forest Plan and will continue to do so throughout Plan implementation.

SOCIOECONOMIC

SOCIAL CONSIDERATIONS

COMMUNITY STABILITY

COMMENT NO. 1: The Organic Act, the Multiple-use Sustained-yield Act (MUSYA), and the Forest and Rangeland Renewable Resources Planning Act as amended by the National Forest Management Act (NFMA) express congressional intent to preserve, nurture, and develop the Nation's forest resources and local dependent communities. The basic requirement of these acts and the obligation of the Forest Service is to provide a continuous supply of timber from the National Forests to stabilize dependent communities and to ensure employment.

FOREST RESPONSE:

A review of legislation affecting public forest lands discloses that Congress has considered timber supply a principal purpose of public policy since the Organic Act of 1897 (16 U S.C 475) However, with the codification of the sustained-yield policy in the Multiple-use Sustained-yield Act of 1960 and the National Forest Management Act of 1976, Congress has so far declined to enact a discrete requirement that community stability be a major and competing consideration with multiple use Congress has chosen to impose a duty to maintain community stability only in acts specific to certain sustained-yield units and on the Tongass National Forest. Thus, Congress has declined as yet to impose a duty to maintain community stability on all National Forest System lands beyond that mandated by the requirement to manage for sustained yield.

COMMENT NO. 2: It is noted that the Forest Service no longer cites 36 CFR 221 as being part of its authorization although these regulations have not been superseded and should remain in force An acknowledgement of these regulations by the Forest Service would strengthen its emphasis on a continuous supply of timber, stabilization of communities, and opportunities for employment.

FOREST RESPONSE:

The Code of Federal Regulations (36 CFR Part 221) deals with timber management planning Part 221.3 relates to the disposal of national forest timber according to management plans Part 221.3(a) states that national forest timber resources shall be prepared and revised, as needed for practical units of national forest As stated in the comment, such plans shall:

1. *Be designated to aid [emphasis added] in providing a continuous supply of national forest timber for the use and necessities of the citizens of the United States,*

3. *Provide so far as feasible, an even flow of national forest timber in order to facilitate the stabilization of communities and of opportunities for employment, and*

4. *Provide for coordination of timber production and harvesting with other uses of national forest land in accordance with the principles of multiple-use management.. "*

The economic importance of timber outputs to local communities is clearly expressed in both the timber and socioeconomic issue statements. The Forest Plan and FEIS address management of all lands and resources on the Forest in the process of resolving all the issues The cited CFR do not (nor do any other laws or regulations) state or imply that timber outputs should be emphasized over other resources. The basic issue being addressed here seems to be Forest policy and not welfare of communities.

COMMENT NO. 3: The Plan should produce sufficient commodity outputs to maintain stability of our local communities.

FOREST RESPONSE:

Although community stability has been associated with timber management, the Forest recognizes the lack of statutory authority and the lack of consensus regarding the meaning and role of community stability.

The final revised regulations for resource management planning in the National Forest System states in 36 CFR 219 1 that land and resource management plans "shall provide for multiple use and sustained yield of goods and services from the National Forest System in a way that maximizes long-term net public benefits in an environmentally sound manner." There is no direction here that the sustained yield has to be sufficient to maintain community stability, only that the sustained yield of goods and services maximize long-term net public benefits while protecting the environment. These two expressions may or may not be viewed as synonymous.

The Forest has taken the broader perspective in addressing the affects of communities and individuals by the mix of multiple resources from the Forest Emphasis is on community well-being and diversity. Discussions can be found in FEIS Chapter IV on the effects of the alternatives on lifestyles, attitudes, beliefs, values, social organizations, and local economics The overall indication is that the Forest Plan will not change the various social indicators much through the given outputs of commodities and other values The Plan expectation is that the Forest will continue to have a positive influence on the economic growth and development of the communities in its area of influence.

COMMENT NO. 4: Despite the utter dearth of statutory authority, the Forest Service appears to believe that the "maintenance of community stability" is the primary constraint on forest management. In addition, "maintenance of community stability" also appears to mean perpetuation or increase in commodity output (to the detriment of noncommodity outputs) and an attempt to artificially maintain lifestyles which would not otherwise be economically feasible. In essence, the Forest Service seems to perceive its mission as being the guarantor of the local timber and range industries The Forest is a national forest and should not be managed as a private woodlot for a handful of local mills. The Forest Service is not charged with the obligation to insure community stability. Its true mission is to ensure that the resources it controls will be productive into perpetuity.

FOREST RESPONSE:

While Congress has considered timber supply a principal purpose of public policy since the Organic Act of 1897, it has so far declined to enact a discrete requirement that community stability be a major and competing consideration with multiple use (see above responses).

The level of outputs of goods and services that the Umatilla National Forest should produce in order to benefit the economic and social needs of local communities is one of the nine public issues to be resolved by this Plan (FEIS Chapter I) The issue has been tracked through the process to final resolution in the Forest Plan. Even though the title of this issue identifies with local communities, the discussion that follows also identifies with state, regional, and national interests. Not localizing this issue would permit it to become undefinable and unresolvable.

As stated in the previous response, the only level of goods and services supported by regulation is one that maximizes long-term net public benefits in an environmentally sound manner.

COMMENT NO. 5: The Forest should be managed for the good of all the people and communities in the area, not locked up and restricted for the benefit of a very few

FOREST RESPONSE:

The public issue of the effect of the goods and services produced by the Forest on the local communities includes all people and segments of the communities. No people or groups are ignored by the Forest Plan. The Plan is designed to benefit society as a whole, including all interested persons and groups, although doing so requires a few restrictions in some areas The public's cooperation, understanding, and acceptance of the Plan decisions and output levels will help to make a very successful multiple-use program on the Umatilla National Forest

COMMENT NO 6: The Plan displays a neglect for those industries represented by tourism, recreation, and sports The management plan to be adopted should include aggressive plans to foster creation of economic structures for these areas. These three industries will distribute income in a more dispersed manner than will the timber industry.

FOREST RESPONSE:

Recreation is considered along with other Forest values in the economic analysis. Appendix B, as well as Chapters II and IV, display outputs for recreation, demonstrate the economic impacts of the industry, and explain how the analysis includes it

COMMENT NO 7. The Forest Service must work cooperatively with concerned citizens, business associations, economic development groups, the forest products industries, and other major public and private timber suppliers in order to develop timber harvest plans which provide for community stability, economic development, adequate timber supplies, wildlife, and forest protection

FOREST RESPONSE:

The NFMA Regulations at 36 CFR 219 6 discuss "public participation" in the Forest planning process. Subsection (d) focuses on the types of activities public participation may include The Final Environmental Impact Statement (FEIS) identifies public issues in Chapter I which are a reflection of public participation. The issues represent the motivating forces or drivers of the planning process. Appendix A of the FEIS represents the public participation in the Forest planning process prior to publication of the DEIS, while Appendix N represents the public contacts and participation between the DEIS and FEIS The Forest expects to continue working with affected and other interested parties on Plan implementation and monitoring as planning continues into the future.

COMMENT NO. 8: Changing the economic base of the region may have a negative impact on Allowable Sale Quantity (ASQ), i e., through constraints on harvest practices.

FOREST RESPONSE:

Yes, increased emphasis on noncommodity outputs (aesthetic and diversity aspects of the Forest) can result in reductions in the ASQ. As the economic base of the region shifts, greater constraints on harvest practices may be needed to resolve noncommodity issues

ECONOMIC CONSIDERATIONS

COMMENT NO. 9: The Forest Plan and model do not adequately consider the socioeconomic impacts of each alternative on the individual counties or specific communities located in the area It is based only on gross national values and is not adequate for local impact assessment

FOREST RESPONSE·

A primary purpose of the social and economic effects analysis is to help compare alternatives and respond to the issues For the Forest, an analysis of impacts to specific communities and counties would not be very meaningful and would be extremely difficult to complete. The Forest has an area affecting parts of 2 states including 10 counties, 54 communities, and 4 Indian tribes. Parts of northeast Oregon are overlapped by the three neighboring national forests. Therefore, the Forest has centered the economic analysis on the 10-county area of influence (for which the Forest has data) with some supplemental analysis for broader issues.

The analysis of the social and economic impact of this Plan on the local communities is described in Chapter IV and Appendix B, Section V, of the FEIS. Economic outputs for such factors as employment, personal income, and payments to counties are identified in Chapters II and IV for the 10-county area in the Forest economic base. Also identified are the social effects of the Plan on the three Forest user groups. The impacts of the Plan on the 10 individual counties in the area of influence can be visualized when these social and economic effects are viewed against the background of the social and economic environment discussed in Chapter III

COMMENT NO. 10: The Forest model does not adequately emphasize economic diversification opportunities

FOREST RESPONSE:

The Forest planning and model incorporates a wide spectrum of resource opportunities which the Forest can produce and over which it has control. The Forest provides a timber supply consisting of a diversity of species, Forest-based recreation opportunities of all types, a variety of wildlife and fisheries resources, forage for livestock grazing, and supplies of quality water. Outputs of most of the resources on the Forest are maintained or increased. Economic use of these opportunities is left to the private sector

COMMENT NO. 11: A statement on the overall goal of financial management should be added to page 4-1 of the Forest Plan. (Should income offset expenses; should a profit be made; and should market supply and demand govern activities—i e., should the Forest always sell to the highest bidder?)

FOREST RESPONSE·

Forest objectives (from standards and guidelines in Forest Plan Chapter 4) are developed from appropriate laws, regulations, and existing direction and to respond to the issues, concerns, and opportunities Currently, the Forest Service does not have direction in law, regulation, or policy to make money from its resources and activities In fact, the Multiple-use Sustained-yield Act of 1960 states that the Forest must give consideration "to the relative values of the various resources and not necessarily to the combination of uses that will give the greatest dollar return or greatest unit output"

The general concept has been carried forward into the planning regulations: "The primary goal in formulating alternatives is to 'provide an adequate basis for identifying the alternative that comes nearest to maximizing net public benefits while responding effectively to the public issues (36 CFR 219.12(f)'. Net public benefits are the overall long-term value to the Nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not (FEIS page II-4)."

Inherent in the planning regulations is the obligation for the Forest to use public funds wisely or efficiently. Cost efficiency is used throughout the analysis process (see FEIS, Appendix B, Economic Efficiency Analysis) Present net value (PNV) is used as an indicator of financial efficiency, but it is an incomplete measure because many of the issues (or values) cannot be easily quantified. In analyzing public comment throughout the planning process, only a few people indicated that the Forest Service should make money; many respondents commenting on the timber issue stated that the Forest should not lose money. Congress will have to change the basic mission of the Forest toward financial management if the Forest is to add an objective about financial management; therefore, at this time, the Forest does not plan to add a Forest objective covering overall financial management

RECEIPTS TO THE COUNTIES

COMMENT NO. 12: If timber outputs are restricted, taxes will rise or service will decrease because fewer dollars will go to the counties. It seems unlikely that a decrease in total harvest volume will increase payments to counties.

FOREST RESPONSE:

Total Forest receipts and returns to counties are primarily derived from timber receipts; however, the relationship between the Forest allowable sale quantity (ASQ) level and Forest receipts is not clear. Receipts are based on timber harvest and are probably most dependent on current timber prices and market conditions and the general economic situation. It is entirely possible that, if timber outputs are reduced, stumpage prices might increase Therefore, reductions in sale volume could conceivably be offset such that little or no drop in the payments to the counties would occur.

The analysis method did assume a direct correlation between timber output, and returns to counties (i.e., as timber outputs increase, so do county returns) Some criticism was received on the draft documents having to do with the analysis not portraying an accurate effect on the counties. The original

purpose of the analysis was to allow comparisons between alternatives. But, as a result of the concerns, the Forest reevaluated the economic and timber harvest bases and made adjustments Revised data can be seen in Table II-6(C). Also, see the Socioeconomic section in Chapter IV of the FEIS for a discussion of the economic impacts of the alternatives and Section V of Appendix B for a discussion of the analysis procedure.

COMMENT NO 13: There should be no payment to counties from timber receipts The national forests belong to all Americans and should not unfairly enrich those who happen to live nearby.

FOREST RESPONSE:

Forest payments are made to counties in which the national forest is located. The purpose is to compensate the counties for the taxes they would have been able to collect if county land had not been made a part of the national forest but was still in private ownership

COMMENT NO. 14: It is unclear in Table III-17 on page III-25 of the DEIS how payments to counties were accounted for.

FOREST RESPONSE:

Payments to counties were not included in Table III-17 but were identified in Tables III-8 and III-42 of the DEIS. Table III-17 only reflected timber sale receipts and costs in describing the below-cost sale concern.

COMMENT NO. 15: It seems highly unlikely that a 6.5 MMBF/year decrease (FY 1987 timber harvest of 215.5 MMBF minus the preferred alternative gross timber sale program of 209 MMBF/year) in the Forest total timber harvest would produce a $1.8 million increase in payments to counties, especially in view of the significantly lower volume in ponderosa pine in the preferred alternative's ASQ

FOREST RESPONSE:

The increase in payments to counties would result from an increase in the timber sale program over the past harvest levels over a 10-year period, not over the 1987 level Averages are used to give a clearer picture of experience.

COMMENT NO. 16: A comparison of the returns to government for the entire planning horizon would be very helpful in evaluating the long-term economic effects of each alternative. The table on page II-80 shows this information for decades 1, 2, and 5, but the benefits of emphasizing ponderosa pine may not be apparent until later decades.

FOREST RESPONSE:

Returns to the Treasury over the entire planning horizon are not reported, althought the effect of these receipts is in the Present Net Value which is reported.

EMPLOYMENT AND JOB SECURITY

COMMENT NO. 17: The forest products' industries are major and viable parts of the economies of the 10 counties containing the Forest. In 1986, the lumber and wood products, furniture, and paper products' industries employed 4,323 persons and paid $102.2 million in wages

FOREST RESPONSE:

State employment statistics for the period 1986-87 indicate that over 62,000 persons were employed in the 10-county area. The 4,323 persons employed in the lumber and wood products industries equaled less than 7 percent of the total persons employed. In nonagricultural employment, government was the leading employment sector, followed by the trade, manufacturing, and service sectors. Lumber

and wood products are a major part of the manufacturing sector only in Grant, Union, and Wallowa counties.

COMMENT NO. 18: The present job estimates create a false impression about the impacts of the alternatives. The alternatives clearly will not create the number of jobs forecast and may even create a decline, although it is impossible to tell from the data presented. The DEIS doesn't fully disclose the negative effects on the local job market if less than the preferred alternative harvest volume is selected. The majority of job gain contained in the documents is already in place, but this is not shown clearly Economic effects displayed in the DEIS were developed using the 1977 version of the IMPLAN Model We are concerned that results do not portray likely effects given today's economic conditions

According to the DEIS, employment will increase by 655 jobs. It's unlikely the region's economy will achieve these substantial gains under the Plan because (1) there is a 40 percent decrease in amount of pine offered for sale, (2) gains are estimated relative to 1980-84, a time of deep recession, and (3) jobs/MMBF were based on a historical relationship that no longer exists due to of modernization of mills. A better model would be based on the 1986 or 1987 industry years.

The 1982 socioeconomic inventory may be out of date. Using old data can mislead the public into believing there will be a net increase in jobs over the current situation (DEIS Appendix B, pages B-42, B-52). In actuality, the numbers may be lower than the current cut and result in a net decrease in jobs and income.

FOREST RESPONSE:

At first glance, more recent data to base estimates of economic impacts would be desirable On the other hand, the volume of timber the Umatilla makes available for sale is only one factor in determining the economic health and well-being of the local area of influence. Other significant factors such as interest rates, economic recessions, technology changes, export markets, and so forth, are completely beyond the Forest control, yet have enormous influence on the local economy.

Therefore, the objective of projecting economic effects is to serve as a basis for comparing the relative differences between alternatives No claim is made that the projected economic effects of a given alternative account for all economic factors or provide an "actual" number of jobs. The most we can say is that, in going from one alternative to another, there will be a relative difference in jobs, or dollars, returned to the counties. Given the basic data and processes, the relative ranking of alternative effects on jobs can be "accurately" portrayed.

Based on comment on the draft documents and changing economic situations, the analysis was reviewed and revised. The "current situation" (as defined in the DEIS for the purpose of comparing potential economic effects of the various alternatives) was based on the 10-year average total sell volume for 1975-84 of 154 MMBF (Table B-V-1, Appendix B) The IMPLAN data base was based on 1977 information updated in 1982 for the final EIS. For the final Plan, the value used for comparison in the FEIS was 165 MMBF, the 10-year average total sell volume for 1979-88 The coefficient for employment response used in the DEIS for timber harvest was 11 7 jobs/per MMBF change in harvest volume The coefficient used in the FEIS is 7 1 jobs/per MMBF. Results of the reanalysis can be seen in FEIS Table II-6C and Chapter IV, Economics The principal change is a large reduction in projected increase in jobs for the final Plan It should also be noted that the relative relationships of the alternatives with respect to job changes are similar to data portrayed in the DEIS

COMMENT NO. 19: Equating higher ASQ's with higher levels of employment may be inaccurate and mislead the public. The DEIS is misleading with regard to the relationship between harvest and jobs.

FOREST RESPONSE:

A strong correlation exists between timber supply and jobs, largely because of manufacturing requirements; however, other factors such as market conditions and increased efficiency in manufacturing methods also affect employment levels Decreases in timber harvest volume may result in increases in jobs in other areas, such as outdoor recreation suppliers;but the increases are not offset by the losses in the wood products industry, according to the Forest IMPLAN data

The coefficient for estimating the effect of timber sale volume on jobs was changed for the FEIS as discussed under the Forest response to Comment No 18

COMMENT NO. 20: The Forest needs to establish a tighter relationship between the declining pine inventory and job losses or gains. Species composition will influence the number of jobs Ponderosa pine harvest creates the most jobs/MMBF; thus, a drop in pine output will have an adverse effect on jobs.

The model ignores the fact that ponderosa pine creates the most jobs per million board feet, in part because ponderosa pine is used in the remanufacturing industries as well as traditional wood products industries.

FOREST RESPONSE:

Changes in the output of pine volume may influence jobs over the short term, but increases in demand for all fiber may help balance out the loss. Pine volume is only one factor influencing jobs The availability of jobs is also influenced by increased modernization A tighter relationship between pine and jobs may not be significant

The final alternative increases the pine output relative to the preferred alternative in the DEIS.

COMMENT NO. 21: The regional economist estimates that the proposed Forest Plan, in combination with other area forest plans, could result in the direct loss of at least 150 timber industry jobs in the 6 affected Oregon counties within 5 years after its inception. This direct job loss could climb as high as 250, depending on market conditions. Indirect job losses could push the total employment loss to as many as 300-500 jobs, with a corresponding adverse impact on personal income levels in the affected counties

FOREST RESPONSE:

Based on our impact analysis, the Umatilla's output level (all resources) could actually increase jobs and income over the past 10 years' experience This does not consider the effects of other area forest plans.

COMMENT NO. 22: The loss of 402 jobs in Alternative E is not a valid figure as the lumber industry is constantly laying employees off because replacement of old machinery with modern and more-efficient equipment eliminates jobs.

FOREST RESPONSE:

Change in the forest industry is a fact of life. Mills have been modernized, a few have opened, a few closed permanently, and some have been shut down for short periods, often in response to market and other economic forces

*Forest products and forestry jobs are related to timber supply and forest activities For Alternative **E**, one would expect a potentially large loss in jobs due to the substantial projected decline in timber volume, however, the predicted job change for any alternative does not represent total losses, but reflects only the effect of the outputs in the various alternatives. The actual total change in employment may be higher or lower*

COMMENT NO. 23: A description of the modeling procedure used to estimate the employment and income impacts should be made available in Appendix B in order for the public to test the validity of the assumptions.

FOREST RESPONSE:

A description of the modeling procedure used to estimate the employment and income impacts was described on page B-53 of the DEIS and can also be found in Appendix B of the FEIS

PLANNING

PLANNING DOCUMENTS

LEGAL REQUIREMENTS

COMMENT NO. 1: Federal regulations for the implementation of the National Environmental Policy Act (40 CFR 1502.22) state that Federal agencies in their preparation of EIS documents "shall include a worst case analysis and an indication of the probability or improbability of its occurrence" in cases of incomplete, uncertain, or unavailable information concerning the environmental impacts of a proposed action. The Forest admits a clear lack of information on a variety of resource issues that would be affected by the preferred alternative, yet no worst case analyses are presented.

FOREST RESPONSE:

The alternatives developed in the planning process attempt to discuss the effects on all the Forest resources The preparation of a "worst case" analysis in the development of an EIS has been dropped from the requirements of the National Environmental Policy Act and is no longer required The Forest has no plans to prepare or include such an analysis in the FEIS However, the long-term and cumulative effects of implementing the Forest Plan have been addressed in Chapter IV of the FEIS.

COMMENT NO. 2: If the Forest is unable to provide the information needed, it is obligated under the Council on Environmental Quality (CEQ) regulations to follow the reporting procedures for "incomplete or unavailable information" prescribed in 40 CFR 1502.22.

FOREST RESPONSE:

The Forest has responded to the CEQ regulations (40 CFR 1502.22) The Forest generally has sufficient information to analyze adverse effects as judged by the interdisciplinary planning team (IDT). Where the Forest is unable to provide relevant information needed to evaluate significant effects, the Forest clearly identifies that such information is lacking or uncertainty exists. It should be noted that a worst case analysis is no longer required.

COMMENT NO. 3: The DEIS fails to explain why the Forest Service selected its preferred alternative. This frustrates attempts to make informed comments on the Plan It also violates the spirit of the Council on Environmental Quality regulations that require the agency to discuss how economic, technical, and policy factors were considered in the decision.

FOREST RESPONSE:

Whenever a Federal agency undertakes an action requiring an environmental impact statement, the agency is required by the Council on Environmental Quality regulations to prepare a concise public Record of Decision. This Record of Decision is the primary document that summarizes a basis and need for the decision. A Record of Decision was not prepared for the draft EIS and Plan. The rationale for selection of the draft preferred alternative could be discerned by reviewing draft Plan Chapter 3 and DEIS Chapter II. As stated in 36 CFR Part 219.10 (c)(1), "The Regional Forester shall prepare a concise public record of decision which documents approval and accompanies the plan and final environmental impact statement". Rationale for selection of the final Plan is shown in the Record of Decision (ROD) accompanying the FEIS and Plan.

COMMENT NO. 4: The draft Plan is in conflict with the NEPA requirements and Federal court order stating that the EIS must consider all reasonable options because alternatives analyzing the effects of no timber harvest, no grazing, and no road building are not considered

FOREST RESPONSE:

The minimum level benchmarks, discussed in the Analysis of the Management Situation, evaluated the options for eliminating timber harvest, road building, and domestic livestock use on the Forest by the end of the first decade. Alternatives prepared for consideration as a Forest Plan are to provide a wide range of reasonable management scenarios for the various uses of the Forest (36 CFR 219.12(f)) Alternatives cannot be completely specified by a single output, nor do they respond to the public issues if they do so. Estimates of output levels for the various resources under the alternatives are presented to assist the public to better understand the possible consequences of implementing a particular alternative. Output levels themselves are not subject to the NEPA requirement for a reasonable range of alternatives.

COMMENT NO. 5: The Forest has not adequately presented a wide range of alternatives as required by NEPA. For example, no alternative was analyzed which would maximize opportunities for commodity production while achieving harmonious use of other resources.

FOREST RESPONSE:

The National Forest Planning Regulations at 36 CFR Part 219 12(f) state that a broad range of reasonable alternatives should be formulated according to NEPA procedures. The alternatives are to be distributed between the minimum and maximum resource potentials to reflect, to the extent practicable, the full range of major environmental resource uses and values that could be produced from the Forest. The alternatives for this Forest are presented in Chapter II "Alternatives, Including the Proposed Action," which describes the alternatives, explains their formulation, and compares them. These alternatives meet all the requirements of the National Forest Planning Regulations identified in 219.12(f). Three alternatives, led by Alternative I, exceed the existing timber management plan (updated to 10/19/84) available annual harvest. In fact, Alternative I does maximize commodity production, is harmonized with other resources, and meets management requirements (MR's).

COMMENT NO. 6: The AMS summary in the draft Plan should be rewritten to clearly set out the elements required by 36 CFR 219.11(A) and 219 12(E) (1)-(5), including a discussion of use and development opportunities.

FOREST RESPONSE:

The National Forest Planning Regulations at 36 CFR Part 219.11(a) and 219.12(e) deal with the analysis of the management situation (AMS). Part 219.11(a) states that the Forest Plan should contain a brief summary of the AMS Chapter 2 of the draft Forest Plan is entitled "Summary of the Analysis of the Management Situation." Part of this regulation requires a discussion of use and development opportunities. This subject was not discussed under a separate heading, but these opportunities were identified throughout Chapter 2 and Chapter 3, under the individual resource and activity headings. Additional discussion of these opportunities has been included in the Forest Plan. Part 219.12(e) states that the AMS is one of the actions required in the preparation of a Forest Plan. The AMS for the Umatilla National Forest was published as a separate document in April 1985.

COMMENT NO. 7: The Forest draft Plan can be improved by specifically addressing how it will implement the requirements of NFMA, and portions of the Plan may need to be expanded to insure that the intent of NEPA is observed.

FOREST RESPONSE:

Chapter 5 of the Forest Plan, "Implementation of the Forest Plan," in the section on Environmental Analysis, explains the process to be used in implementing the Forest Plan under NEPA.

COMMENT NO. 8: The final EIS should contain a true "no action" alternative consistent with the requirements of NEPA Alternative A as the "no change" alternative is not a true picture of the commodity outputs for the Forest.

FOREST RESPONSE:

As stated on page II-21 of the DEIS, Alternative A ". is the 'No Action' alternative required by NEPA and represents the existing situation, insofar as possible " The alternative represents the combination and application of unit plans, under which the Forest is currently operating, other resource plans, updated information (such as timber inventory, yield tables, suitable acres, etc) and application of management requirements all projected into the future. Some confusion exists over the timber outputs since the current (1963) Timber Management Plan calls for an annual ASQ of 147 8 MMBF. However, Alternative A is made up of the components as described, and not just the Timber Management Plan, projected into the future.

COMMENT NO. 9: The Forest should consider how this Plan will affect other communities, and how actions on adjacent national forests and private land will affect the Forest This principle is outlined in NEPA, the NEPA regulations, and a recent policy directive from the USDA The Forest Supervisor is required to determine how the Plan should deal with the impact of the plans and policies of adjacent owners and government (36 CFR 219 7).

FOREST RESPONSE:

The effects of national forest management on the lands, resources, and communities adjacent to the Forest are constantly being monitored and evaluated through a variety of activities. The Forest has worked closely with interested parties through the entire Forest planning process Coordination with adjacent national forests has been continuous through the planning process; in general, emphasis has been on developing reasonably consistent approaches to the resource issues and on minimizing effects on neighboring Forests. Demand and supply estimated for many resources have taken into account neighboring forests' (and others') capabilities Coordination and involvement of numerous state, other Federal, and other governmental agencies have also been occurring throughout the process. Indian tribes and related entities have also worked closely with the Forest in the planning process. Interested owners of adjacent private land, and other individuals, groups, and organizations have also been actively involved throughout the process (see Appendices A and N for details) All of the interested parties have helped to identify and shape the issues and concerns, as described in FEIS Chapter I. A review of the planning policies and direction of other Federal agencies; state, county, and local governments; and Indian Tribes pursuant to 36 CFR 219.7(c) is provided in Chapter III of the FEIS.

The Forest addressed the multitude of interests while tracking the issues and concerns through the process to resolution in the final Plan Effects of proposed actions are addressed in Chapter IV. Within each resource area, activity, or other element, conflicts with other agency and group plans and policies are addressed throughout the chapter In some cases, where the IDT has identified an impact, the effects of management of adjacent lands have also been discussed and described in FEIS Chapter IV. Finally, the Regional Forester, as the responsible line officer, took cognizance of the coordination of this Plan with the plans of adjacent national forests and others throughout the Forest planning process and when he signs the Record of Decision.

MANAGEMENT AREAS IN GENERAL

COMMENT NO 10: The method used by the Forest Service to "zone" the Forest into exclusive emphasis areas creates conflict by drawing artificial lines on a map. This technique tends to polarize the user groups by not allowing harmonious management of the resources.

FOREST RESPONSE:

The Forest has been divided into management areas for the Forest Plan for several purposes (1) to provide management that fits the characteristics of the land, (2) to assist in resolving the issues; (3) to aid in building alternatives and completing analysis; and most important (4) to provide the multiple-use direction for managing activities on specific areas of the Forest In fact, many forest areas lend themselves naturally to being classified for certain types or possibilities of direction Riparian areas, recreation areas and sites, travel routes, big game winter ranges, RNA's, classified areas such as wilderness, municipal watersheds, and areas with special features fit into this situation Other Forest characteristics, such as landtypes and vegetation, also strongly influence management possibilities. Management areas were shaped by and designed to fit the land

The concept that all "multiple uses" can be provided on every acre worked in the past However, in today's environment, competition for resources and uses is significantly higher (see FEIS Chapter I). The "everything-everywhere" approach to management is not working well within the magnitude and diversity of issues expressed about management of the Forest The management strategy concept is used to more effectively address the issues and provide multiple-use on the Forest

All management strategies are developed in response to an issue or combination of issues Therefore, each management area has a resource emphasis directed towards resolving particular issues For example, old growth is identified as an issue; two old growth strategies were devised to respond to the issue. By producing an array of management areas, different options for managing lands can be compared. Tradeoff information is developed by comparing application of different management areas on the same piece of ground Different combinations of management areas are used to design different alternatives for consideration in overall multiple-use management of the Forest.

The multiple-use direction for managing specific Forest areas is inherent in management areas; direction comes from Forest Service manuals, handbooks, Regional Guide, and other sources Management areas provide the vehicle for placing multiple-use direction on the ground A close look at each management area shows that although one or two resources are emphasized within a given management area, other resources, areas, or activities have been coordinated or harmonized within that area to meet a given objective

Some resource use, usually developmental, may be limited to meet the overall intent of the management area. However, several resources such as water, recreation opportunities, range, and wildlife are produced across most, if not all, management areas Also, a closer look at the alternatives and the final Plan reveals that management area designs fit the ground and are internally coordinated to provide a broad spectrum of multiple uses in meeting alternative objectives

The planning concept of "zoning" is familiar to the public because it is commonly used People understand the principles Many cities, counties, and states use zoning or operate with quasi-zoning concepts Since most people understand "zone" concepts, they have generally understood and supported management strategies and areas Therefore, the management areas concept helps to sort out conflicts, provides the opportunity to resolve them, and allows multiple use on a Forest basis

COMMENT NO. 11: The Forest should develop a strategy that allows multiple use of the Forest without emphasizing one particular resource, especially for those lands that may not be fully developed during the term of this Plan but are still an integral part of the planning resource None of the strategies presented is adequate for this type of management.

FOREST RESPONSE:

The definition for multiple use provided by the National Forest Management Act (NFMA) has been included in the introduction to Appendix C While not all the management strategies (identified in Chapter 4 of the Plan and FEIS Appendix D) are applicable to all undeveloped or other areas because they are resource site-specific, many are applicable and have been added in the Plan. As stated in NFMA, some lands will be used for less than all of the various renewable resources, but the resources will be used will be done without the impairment of the productivity of the land and without necessarily producing the combination of uses that will give the greatest dollar return or the greatest unit output.

For the final Plan, the Forest developed several new management strategies, including E2, which combines timber and big game management In addition, within the existing management strategies, management practices were added (including uneven-aged management) and direction clarified The Forest-wide Standards and Guidelines were also revised to clarify direction. The changes were made to help resolve issues identified from public comment The Forest could have developed a strategy that "blended" the multiple uses and applied it to undeveloped or other areas However, within the revised mix of available management strategies (see FEIS, Appendix D) and standards and guidelines, the Forest has the sufficient tools to resolve the issues and provide effective multiple use on the Forest

MANAGEMENT STRATEGIES

COMMENT NO. 12: The preferred alternative should include some roadless areas for management under strategies A1 and A2

FOREST RESPONSE:

The Forest Plan identifies Management Area A1 for Wenatchee Creek, Old Hells Half Acre, and part of the Upper Tucannon roadless areas; and Management Area A2 for parts of Spangler and Lookingglass roadless areas.

COMMENT NO. 13: Management Areas A3 and A4 should be modified as follows:

a. The snag habitat should be at the 60 percent level.
b. There should not be any created openings in the foreground retention or partial retention areas.
c. Leave 10 target trees/acre at final removal.
d. Limit the openings for vista purposes to a maximum of 100-foot and 200-foot openings/mile at any one time.
e. Uneven-aged management techniques should most often be employed.

FOREST RESPONSE:

The viewshed strategies have been modified from those presented in the draft as follows (see Appendix D in FEIS):

a. *Both contain snag habitat levels at the 60 percent of potential level.*
b. *Created openings are permitted, but have size limitations depending on visual sensitivity. Openings are part of the natural environment; the management areas replicate a natural to near-natural environment. Openings also increase variety in the landscape.*
c. *Uneven-aged management is the preferred silvicultural system, although even-aged practices may be used. Uneven-aged practices will preclude a requirement for leave trees at final removal.*

COMMENT NO 14: Why was part of Sheep Creek left out of the A7 Management Area?

FOREST RESPONSE:

Management Area A7, Wild and Scenic River, was designated for the Grande Ronde River and only included about one-fourth mile of Sheep Creek upstream from its junction with the Grande Ronde River In addition, the stream and adjacent area were studied by Congress in 1988 and were not included in the Oregon Omnibus Wild and Scenic Rivers Act of 1988; therefore, the creek is not included in the final Plan as an A7 area

COMMENT NO. 15: In Table II-5, on page II-67, under A7, Wild and Scenic River, "retained old growth" is indicated as not compatible. It would be more accurate to indicate "C," compatible. Under "roaded dispersed recreation" the code should be "5" rather than "C."

FOREST RESPONSE:

"Retained old growth" has been coded as "5" in the FEIS The "Roaded dispersed" remains coded "C" since it is compatible. The scenic and recreational parts of the A7 Management Area permit some timber harvest and recreational activities which are not permitted in the wild portions of the A7 area

COMMENT NO. 16: The standards in A7 are deficient in the following areas:

a. There is no specific language prohibiting water resource development, diversions, and other water course alterations.

b. There is no specific language regarding utility corridor placement, and mineral development.

c. Standards contain insufficient direction regarding timber harvest.

FOREST RESPONSE:

The Forest Plan handles these subjects as follows:

a. These development items are covered in Appendix D under Management Area A7, Facilities, under the term "Other Management Facilities."

b Utility corridors are discussed in Appendix D under Forest-wide Standards and Guidelines, Land Uses, Utility and Transportation Corridors.

c. In Appendix D, additional language concerning mineral withdrawals has been added to the Minerals section of Strategy A7.

d. In "wild" sections of areas managed under A7, timber will be managed on an unscheduled basis to meet wild section goals. In "Scenic and Recreation" sections, timber harvest is permitted on a scheduled basis, and will meet visual quality objectives specified in A7.

COMMENT NO. 17: As noted on page 4-76 of the draft Plan, under Management Strategy A8, Transportation, roads may be developed for the purpose of enhancing viewing experiences. Any additional roading of the proposed areas will detract from the very scenic qualities which the areas are designed to protect.

FOREST RESPONSE:

The road construction portion of the management area has been removed in the Forest Plan.

COMMENT NO. 18: Prescriptions under Management Strategy B1 should outline how and when wilderness area values will be protected from overuse and degradation by large commercial outfitter parties.

FOREST RESPONSE

Commercial outfitter parties are covered under the following sections of management strategy B1:

- *Under Wilderness; Section 2 speaks of human overuse, and Section 7 deals with degradation.*
- *Under Recreation; Section 1 speaks of degradation, Section 2 deals with visitor capacities, and Section 5c addresses regulations.*
- *The Facilities section deals with permanent improvements.*

In addition, the standards and guidelines for Land Use (Other Uses, Section 1) covers the outfitter and guide operating permits.

COMMENT NO. 19: Please clarify the differences regarding specific timber practices (including road building, skidding, and yarding) between management strategies C5, C6, C7, and F1 through F4

FOREST RESPONSE:

Timber management, timber harvest, and road construction are permitted in all of these management areas except F2 and most of F4, where no activities are allowed. Practices in F1 are limited to slopes of less than 30 percent. Some of the requirements and practices in all the management strategies have been revised since the publishing of the draft, as seen in Appendix D of the FEIS.

Highlights of the strategies are:

- *C5 and C6 are both riparian strategies Both use uneven-aged and even-aged management and associated practices. Single tree selection is emphasized near streams C6 permits more intensive harvest away from streams All yarding and skidding systems are available, provided soil protection requirements can be met*

- *C7 is an area-wide fish management strategy. No timber harvest is permitted adjacent to streams (except for salvage). On the uplands, all practices are available, with some limitations on rate of timber harvest and road construction*

- *F3 permits all types of timber harvest and management and road construction typically used on the Forest, modified by the study needs in the Barometer Watershed*

- *F4 applies only to the Walla Walla River drainage. When timber harvest and management apply, all silvicultural practices, harvest systems, and road construction are permitted.*

COMMENT NO. 20: If "new information permits timber output levels to be increased above current plans ..(and be) used in the current direction alternative (**A**)" (DEIS, p II-21), why is the existing policy, expressed in Senate Report 98-465, not incorporated into Alternative **A**? The Forest must explain its failure to meet the intent of Congress in its formulation of alternatives and land allocations for the North Fork John Day fishery.

FOREST RESPONSE:

*Senate Report 98-465 states that the Committee on Energy and Natural Resources recognized there were nearly 100,000 roadless acres outside of the North Fork John Day Wilderness for which the Forest Service should recognize the importance of the fisheries habitat during the development of forest plans. Recognition of this fact (and possibly its application to other areas) has been expressed through management strategy C7, and has appeared in Alternatives **D, E, F/M** (preferred), and the final Plan (See Table II-4 in the FEIS). However, the committee's concern was not written into legislation and deals only with the future Plan; therefore, Alternative **A** reflects current direction and cannot include a strategy which is not currently being used.*

COMMENT NO. 21: In the DEIS, the preferred alternative had a stated purpose on page II-41 to "maintain all or parts of roadless areas that have apparent strong public interest including those with most of the grass-tree mosaic (GTM)." This confirms the point of view that GTM is no more than a surrogate for retaining unroaded lands for semi-primitive nonmotorized recreation and the eventual re-review for wilderness The maintenance of "future options such as the consideration of roadless areas for wilderness" (page I-11) shouldn't be considered at all after the repeated wilderness evaluations to which these areas have been subjected with concomitant negative findings on suitability.

FOREST RESPONSE:

A sizeable portion of the Forest has been identified by managers as grass-tree mosaic (GTM). The area is composed of patches or bands ("stringers") of trees interspersed with grassland openings, and characterized by shallow, rocky soils The majority of the GTM areas lie on slopes greater than 60 percent; the remainder on adjoining gentle tableland GTM areas comprise most of eight of the Forest roadless areas. Most of this land is important winter range for big game animals, primarily deer and elk, or holding areas for these animals during mild winters Other management concerns about these areas are (1) visual management, (2) soil erosion that may result with management activities (including road building), (3) improved water quality, (4) wildlife management, and (5) vegetative diversity

The Forest Plan treats GTM as a distinctive resource area whose greatest value is to support big game animals during all but the summer season Other values listed above have received strong consideration in the identification of the GTM The resource activities stated for management strategy C8 are believed to be those that will support the objectives A review of these objectives will identify that motorized use is permitted as long as this use is determined not to be detrimental to the big game animals.

Although not a principal objective of the C8 management strategy, some semi-primitive nonmotorized recreation opportunities are available due to retention of the included roadless areas in meeting other objectives Each roadless area was reviewed by Congress for inclusion in wilderness, FEIS Appendix C also covers each roadless area for its resource values including wilderness characteristics Most of the Forest-identified GTM was not included in classified wilderness due to its characteristic but is more important for the other described values. In 10 to 15 years, when a new plan is prepared, the roadless areas could be subject to review as wilderness.

COMMENT NO. 22: The Forest Service should develop strategies emphasizing creative conflict-reducing management as opposed to simply the passive role of roadless area caretaker.

FOREST RESPONSE.

Each of the 29 management area strategies identified in the Forest Plan were developed to recognize a current management situation, to accommodate the special set of biological, physical, social, and economic conditions inherent to the Forest, and/or to address identified issues As such, each of the strategies with its management direction is intended to help reduce conflict. A review of the management strategies in FEIS Appendix D shows coordinated, active management in each The set of strategies covers the conditions, issues, and objectives of the Forest; no additional ones are needed to help reduce conflicts or resolve issues.

Every roadless area has had a different management strategy applied in some alternative, as seen in FEIS Appendix C. Tradeoff information has been developed for each Alternatives were developed around different objectives Assignment of strategies to different roadless areas was based on how different strategies fit conditions, resolved issues, and fit objectives The total array of strategies in a given alternative helps to resolve given issues and reduce conflicts In the final Plan, therefore, some of the roadless areas will remain unaltered, while others will have part or all of their area altered. Roadless areas which remain unroaded will do so in order to protect and manage for the resource values stated in the management area strategy and to meet the overall intent and desired conditions of the Plan.

COMMENT NO 23: It is difficult to determine how many of the management area directions constrain the range of harvest prescriptions available.

FOREST RESPONSE:

Appendix K of the FEIS explains the "big picture" viewpoint of the harvest system determination Practices are tailored to meet specific resource objectives in each management area. An overview of management areas is provided in FEIS Chapter II, and details on each management strategy are found in Chapter 4 of the Forest Plan and Appendix D of the FEIS, which describe specific permitted activities and constraints on the harvest prescriptions. Changes have been been made to many strategies permitting timber harvest by incorporating uneven-aged management practices. The harvest prescriptions used in the FORPLAN model for each management area are described in Appendix B

STANDARDS AND GUIDELINES (FOREST-WIDE)

COMMENT NO. 24: Executive Order 11644, amended by E O. 11989, was issued to establish "a unified Federal policy toward the use of (off-road) vehicles on the public lands" (37 Fed. Reg. 2877, Feb. 9, 1972). Standard and guideline 21 on page D-2 of the DEIS Appendices is therefore incomplete. This S&G correctly states the first part of the directive found in section 3(a) of the E.O., "zones of use," but fails to mention the second part in which specific criteria for protecting resource values are listed.

FOREST RESPONSE·

Standard and guideline 21 was based on the E O 11644 (Section 3(a), Zones of Use: ". based upon the protection of the resources of the public lands, promotion of the safety of all users of those lands, and minimization of conflicts among the various uses of those lands." The second half of the section is a more specific listing of the general items ". in accordance with the following — (1) Areas and trails shall be located to minimize damage to soil, watershed, vegetation, or other resources of the public

lands. (2) Areas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats. (3) Areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors. (4) Areas and trails shall not be located in officially designated wilderness...." Standards and guidelines 22 through 24 for Recreation, and 11 (page D-19) for Transportation, address the second half of the section.

In the final, the Forest-wide Standards and Guidelines for recreation have been revised and combined to clarify the full intent of the Executive Orders (see FEIS Appendix D) Within most management areas, standards and guidelines provide additional off-highway vehicle (OHV) direction which complies with EO 11644. In addition, project level planning will follow the NEPA process, meet Forest Plan direction, and consider the specific resource values for individual areas when management activities are proposed.

COMMENT NO. 25: The standards and guidelines for implementing a forest plan should state the bounds or constraints within which all practices will be carried out in achieving the objectives of the plan. In other words, standards and guidelines must be measurable to be meaningful.

FOREST RESPONSE:

Forest-wide Standards and Guidelines were developed for the purpose of identifying direction for activities on the Forest. As such, they are an expression of management direction which responds to public issues and addresses concerns and opportunities In addition, they are built from laws, regulations, existing direction, land capabilities, and professional judgment

The Forest supports the concept of measurable standards and guidelines Many of them are measurable, as found in FEIS Appendix D; however, the Forest IDT recognized that not all will be, for several reasons. The Forest doesn't have adequate or complete data to support all measurable standards, and clearly describing measurable standards is very difficult, particularly those dealing with quality. In some cases, the actual standard is found in other direction Therefore, the IDT described some standards and guidelines in terms of intent However, the IDT did complete a review of all draft standards and guidelines to enhance measurability where possible.

Implementation of the direction is monitored and evaluated to determine how closely management standards and guidelines have been applied. Thus, measurable standards will be more readily monitored. Others will require IDT judgment to determine success or failure of the given standard. One expectation is that as the Plan is implemented (and with the passage of time) the standards and guidelines will improve in measurability.

COMMENT NO. 26: Wildlife management standards and guidelines should not contain qualifying language such as "consider," "may," and "if possible." Guidelines should be specific and enforceable.

FOREST RESPONSE:

The Forest-wide Standards and Guidelines for Wildlife shown in Appendix D provide minimum direction that will be followed in all management strategies and alternatives They are therefore expressed in specific terms such as "will or must," insofar as possible Where possible and needed, the management strategies are expressed in the same terminology However, some directions are expressed in terms of "may," "if possible," "will consider," etc., which are difficult to quantify or describe in specific terms. The final standards and guidelines and management area directions have been carefully reviewed to consider the best wording, minimize unclear language, and make changes as needed.

COMMENT NO. 27: Nowhere is it clearly stated what is considered to be the overall condition of the Forest. Therefore, there is no standard upon which to judge improvement or degradation

FOREST RESPONSE:

The Forest is so variable in terms of land characteristics, resources, uses, and issues that having one standard or even a few standards from which to judge changes is not practical. The current status and standards for management are best interpreted as a function of a number of resources and uses. The Forest monitoring plan (described in Chapter 5 of the Forest Plan) identifies the elements that will be measured periodically to determine how closely management standards and guidelines have been applied. This plan also identifies the criteria that will be used to judge future change for all the elements to be monitored. The Forest will have many areas in which to judge improvement.

The Forest has monitored many of these elements on a continual or a recurring basis for many years through such means as resource inventories, field examinations, and baseline and project monitoring. Elements which have been monitored in the past provide a record upon which to judge future change, while elements which have not been monitored in the past will have standards established for them. Monitoring standards are directed toward evaluation of the Forest-wide Standards and Guidelines, Best Management Practices, and the "desired future condition" of each management strategy.

PLANNING AREA

COMMENT NO. 28: Many state agencies were unable to make effective comments on the DEIS and Plan because these documents lacked needed geographic detail. The state agencies need information on proposed activities and their effects by watershed basis or some similar forest subdivision. It is not possible to determine from the DEIS or Plan if the geographic breakdown for monitoring and analysis that the Forest utilizes is adequate for estimating environmental effects. The Forest should provide a map showing this geographic breakdown in order that its adequacy may be assessed.

FOREST RESPONSE:

One of the changes made from the draft Plan was an increase in flexibility in order to provide and display information and analysis results. Currently, the Forest can provide information by watershed (allocation zones) or management areas. As part of the draft Plan, watersheds were used in analysis. The watersheds essentially conform to subwatershed boundaries as defined by Forest managers in this level of Forest planning; they were designed to average 8,000-10,000 acres in size. The maps displaying watershed boundaries are a part of the planning record.

Management areas are shown on the final Plan map. Additionally, the Forest has analyzed environmental effects for some resources on a subwatershed and management area basis, as described in FEIS Chapter IV. Finally, monitoring of some resource items has been more clearly defined as being on a subwatershed basis.

COMMENT NO. 29: It is not clear what the economic impacts of the Plan will be. Much of this ambiguity results from calculations which seem to be made using the old data listed on page B-11 (Sources of Data) of the DEIS Appendices. More current data should be used, along with an explicit accounting for the downward bias introduced by the 1982 recession.

FOREST RESPONSE:

The comment refers to the sources of data used in the planning analysis A quick review of the section shows, with some exceptions such as cost information, the data listed is "basic" data, much of which remains reasonably constant through time. For example, roadless and wilderness boundaries, winter range delineations, and land types are "solid" data Obviously, other data has changed as additional information was gathered, refined, or adjusted. Most of the information given is still valid for planning purposes; however, adjustments have been made in the model, analysis, and documents where needed.

ALTERNATIVES

COMMENT NO 30: The Forest compared sediment yields of alternatives to the "current direction," but the current direction timber sale quantities are actually 43 MMBF higher than those stated in Alternative **A** (181 MMBF to 158.4 MMBF). Thus, the comparison of sediment production of Alternative F to Alternative **A** is an inaccurate portrayal of the actual water quality impacts of Alternative F

FOREST RESPONSE:

*Forest planning is a portrayal of the future. As such, Alternative **A** (Current Direction) reflects what could happen if current direction were applied in the future Alternative **A** incorporates direction from unit plans, management requirements, and updated information (new inventory, land suitability, yield tables, and others); however, the Forest is also operating under a 1963 Timber Management Plan, with an allowable sale quantity of 147 8 MMBF/year. The TM Plan and unit plans were never integrated Alternative **A** makes that integration and provides the program the Forest would follow in the future under current direction Included are all the outputs (such as ASQ at 181 MMBF/year) and the resultant effects. Comparisons between the draft Plan (Alternative **F**), Alternative **A**, and other alternatives does provide an "accurate" picture of relative sediment potential, given future implementation and knowledge about each alternative.*

*The comment implies a need for comparing the alternatives with the past or existing situation. Total sediment yields are unknown and were not estimated in the existing situation However, an approximate estimate of the existing situation can be made by reviewing alternatives (or some benchmarks) with similar programs (such as draft Alternatives **D** or **B**) and their outputs and effects Relative comparisons can be made with the Forest Plan. See Table II-8 in the FEIS for comparisons of alternatives with the final Plan sediment yield projections*

COMMENT NO 31: Although the Forest can meet all of the resource output levels, the public has not been given the opportunity to compare the unaltered historical output levels with the DEIS alternatives

FOREST RESPONSE:

*FEIS Chapter III provides a comprehensive and detailed look at the Forest and its current status Outputs for the existing situation can be reviewed and compared with alternatives in Table II-8 In addition, Alternative **A** continues management direction as presently prescribed in The existing six unit plans; all resource plans; policies, standards; guidelines; and management requirements projected into the future. If Alternative **A** may be considered to represent the "unaltered historical output levels," then Tables II-6, II-7, and II-8 display the comparison of these Forest resource outputs with the outputs of the other 10 alternatives considered in this Plan. See discussion in comment number 25 above*

ANALYSIS - FORPLAN

COMMENT NO. 32: Use of the FORPLAN model inhibits public participation in the planning process Because of it, the public must accept at face value Forest Service assertions about the level of sustained yield, the economics of timber production, etc We do not think NFMA was designed to put the public and local communities at the mercy of a computer programmer. In addition, the DEIS states that there is a great deal of "latitude" (page II-6) in formulating FORPLAN analysis. Without providing additional information, the public is unable to provide informed comment on the DEIS, as is required by NEPA.

FOREST RESPONSE:

As stated in Appendix B of the FEIS, "forest planning is a very complex process in which an enormous amount of information and interdependent decisions must be considered before an alternative management plan can be recommended as the one which maximizes net public benefits" while responding effectively to the issues (see NFMA regulations 36 CFR Part 219 12 (f)) To accomplish this task, the use of FORPLAN as an analysis tool for national forest system planning was decided by the Washington Office of the USDA Forest Service Without latitude in formulating the mathematical representation of the forest planning problem there would be only one or a few alternative(s) Meeting the planning regulations would be difficult without use of FORPLAN or similar forest modeling process. The planning model helps to address the issues, including many of the technical concerns, and assists

in the analysis of potential tradeoffs Latitude in modeling is needed because of the uniqueness of each forest and its issues Information describing the analysis process used in developing the Forest Plan is in Appendix B of the FEIS

The Forest agrees that the planning model (FORPLAN) is imposing and may have reduced some public participation due to its complexity; but, use of large linear programs is not new and has been used in forestry operations for a number of years. Some people are familiar with these models In addition, the public participation process has been open, and efforts were made to encourage involvement. Many of the interested parties intensely reviewed all aspects of the Forest planning model such as prescriptions, costs, yield tables, land suitability, MR's, inventory, and a host of other inputs and assumptions They offered their critiques, and changes were made as a result Opportunities to discuss the various aspects of the model were available at the many public meetings and open houses Some of the public took advantage of the opportunities and did discuss different modeling points. Most of the public focused on the issues that concerned them and followed the resolution of their particular issue through the process.

COMMENT NO. 33: The model's complexity prohibits confirmation of the adequacy of the constraints, and field duplication is not permitted due to abstract identification of stands in the model. Some corrections of anomalies in the model have been made; others probably exist and haven't been identified or corrected.

FOREST RESPONSE:

The planning model is a representation of the Forest, the on-the-ground situation, and management possibilities. The model is necessarily complex because the Forest and its economic and social environment are complex; but a model is a model, which necessarily involves many assumptions and simplifications. The Forest model is built on a good foundation of a strong data base Many of the assumptions and constraints have been tested through use of the model. Some on-the-ground testing of the adequacy of the assumptions and constraints has been made since the release of the DEIS. The Forest was able to map some of the FORPLAN solutions (due to data base and GIS capabilities) in making the on-the-ground evaluations. For the most part, it has been found that the constraints can be met. Adjustments were made in the FORPLAN Model between the DEIS and FEIS to better portray some of these constraints. These changes are described in Appendix B to the FEIS

The importance of proper implementation and monitoring cannot be overemphasized. Verification of, and adjustments to, the Forest Plan will continue after the start of implementation Most forests that have implemented a forest plan have found that adjustments and changes in the plan were needed. If stated constraints or objectives of the Umatilla's Plan cannot be met because of inaccuracies in the modeling, then the appropriate adjustments or revisions to the Plan will be made See Chapter 5 of the Forest Plan for a description of the implementation and monitoring procedures

COMMENT NO 34: The Forest should reexamine its condensation of the forest inventory into just a few classes, to ensure that the analysis is not biased by artificially delaying the availability of volume in existing immature stands, and to ensure that the commercial thinning choices have been allowed for all stands where they are biologically and economically feasible.

Because of the starting age class distribution, little or no volume is produced by commercial thinning until the sixth period of the Plan In fact, the FORPLAN output shows no thinning volume until the third period of the planning horizon. No prescriptions for thinning existing stands were included in the model. This FORPLAN output is in sharp contrast to the programmed activities for Fiscal Years 1988-92 displayed on page 4-32 of the proposed Plan. That table indicates that 80 MMBF will be harvested from the Forest by commercial thinning and salvage during the 5-year time period, which amounts to about 16 MMBF per year.

The proposed Plan includes no intermediate harvest for the next decade and very little over the first 50 years. This result may be, in part, an artifact of the way the model represented the forest structure in its analysis. Not representing any age classes between 40 and 90 years, compounded by not allowing commercial thinning to occur on stands grouped at 100 years of age results in elimination of commercial thinning opportunities that might provide crucial volume during the first 50 years.

Timber inventory documents for the Forest indicate that there are 200,000 acres of timberland on the Forest between the ages of 40 and 99 years The procedure of lumping age classes for the FORPLAN input may

contribute to the low growth potential shown in the early decades of the Plan. In addition, no acres are listed for ages that would provide thinning opportunities on existing stands. The Forest FORPLAN model should be updated to represent the true inventory of the Forest as shown in the Forest inventory documents The beginning harvest level constraint is binding on the preferred alternative FORPLAN run. Increased thinning of the existing stand could offset this constraint

FOREST RESPONSE:

As a result of public comment, the Forest reviewed the structure and aggregation of the inventory in FORPLAN. Adjustments were made and are reflected in the FEIS and Plan

COMMENT NO. 35: Opportunities for thinning existing stands should be included in the FORPLAN model to represent actual, on-the-ground practices that the Forest appears to be implementing at the present time.

COMMENT NO. 36: To insure long-term sustained-yield, timber stand improvements which currently are not scheduled in FORPLAN for existing stands should be scheduled in the first decade.

FOREST RESPONSE:

There are opportunities for thinning existing stands in the FEIS FORPLAN model Because of the aggregated age classes in the FORPLAN model, there are not opportunities in the first few decades To allow thinning in these decades would require restratification of the timber condition classes at a resolution not possible with our current inventory Since there is no reason why every activity on the Forest has to be modeled in FORPLAN, we scheduled thinning in the first few decades outside of FORPLAN.

COMMENT NO. 37. The Plan should update the yield tables used in the FORPLAN model to reflect the actual growth occurring in young stands on the Forest.

FOREST RESPONSE:

As part of the harvest update between the DEIS and FEIS, the seed sap condition class was increased from age 0 to age 10 to reflect growth in the younger age classes

COMMENT NO. 38: NFMA is violated because FORPLAN selects harvest methods based on volume production and present net worth. NFMA states harvest methods are not to be selected based on dollar returns or volume outputs.

FOREST RESPONSE:

The provisions of NFMA, the Regional Guide, and the management objectives for the Forest (and given management areas) are integrated in the selection of the available harvest methods. Thus, the choices the FORPLAN Model has to select from are determined in large measure by biological considerations and social objectives for a given area The available choices are outlined in Appendix K of the FEIS. The choices used in FORPLAN were narrowed to use the most cost efficient methods, as described in Appendix B. Using the cost efficient methods is a provision of NFMA and regional direction Most of the public supports wise (cost efficient) use of public funds. The Forest has added uneven-aged management harvest methods that are not the most cost effective in order to meet public issues A final analysis to determine harvest method is done at the project planning level

The FORPLAN Model is "directed" to choose the most economically efficient method only after the biological and social criteria have been met. NFMA states, " the harvesting system to be used is not selected primarily because it will give the greatest dollar return or the greatest unit output of timber...." Since selection of harvest method is based on the combination of biological considerations, social objectives, and economic or timber output objectives, NFMA is not violated The Forest Plan produces less than maximum potential volume and PNV, in part because harvest methods have been incorporated that are not the most cost efficient or volume producing.

COMMENT NO. 39: The model is allowed to select stands to harvest in any given year without being constrained by the logistics of road construction, road use, or timber sale boundaries.

FOREST RESPONSE:

The model is formulated so that a certain percentage of road construction costs are incurred when timber harvest is scheduled in an area, depending on the amount of roads that are already present in that given area. The procedure is fully described in Appendix B to the FEIS. The dispersion constraint(s) and other objectives (such as cover requirements) ensure that timber harvests are not scheduled without regard to one another

COMMENT NO. 40: All outstanding technical issues involving land suitability, yield table development, and FORPLAN formulation must be resolved.

FOREST RESPONSE:

All issues were resolved to the extent possible in the FEIS. Given the monumental task involved in the assimilation of information, model formulation, analysis of data, etc., involving the extremely diverse range of issues and resources for the Umatilla, it is not possible to achieve perfection. Public discussion on each of these topics will continue Monitoring will continue to point out management strengths as well as areas needing additional information or attention Continual refinement of the inventories and analysis tools will occur as Forest planning moves into the future.

ANALYSIS - IMPLAN

COMMENT NO. 41: The 1977 IMPLAN input/output (I/O) model used by the Forest Service to estimate employment and income changes for the various alternatives should be replaced by the 1982 version of the model. The model which the Forest uses for determining job coefficients is based on outdated data. This makes the analysis of the magnitude of job loss very difficult.

COMMENT NO. 42: The IMPLAN I/O model has been updated to 1982 industry relationships. Since 1982 was a severe recession year for the forest products industries and a moderately-severe recession year for the Oregon, Washington, and U S. economies, it might be best to develop a IMPLAN I/O model based on the 1986 or 1987 industry relationship.

FOREST RESPONSE:

The updated IMPLAN data base (1982) was used in developing new output coefficients to prepare comparison data in the Forest Plan. The base year(s) timber harvest and other information were also updated. See FEIS Chapter IV, Economics and Appendix B for discussion. The resultant information provides adequate comparison information between alternatives but the actual effects of Forest management on employment and other economic factors is less reliable

Unfortunately, the National IMPLAN data base is only updated in 5-year increments with an ensuing delay of about 2 years while it is compiled. Since the most recent one was begun in 1987, it is not yet available for forest planning.

COMMENT NO. 43: Given the significant difference in values between ponderosa pine and other species sold on the Forest, separate employment and income response coefficients should be developed for ponderosa pine and other tree species. They should also be developed for hunting, other recreational activities, and for county and Forest Service expenditures.

FOREST RESPONSE:

Ponderosa pine is the Forest's most valuable species and would likely have some effect on employment and personal income, certainly on total income. Unfortunately, the Forest does not have the data to indicate the effective contribution of ponderosa pine on jobs and income. Most mills in the area harvest a mix of species, and separating the effect of the different species would be difficult.

Separate recreation coefficients are developed for determining developed and dispersed recreation related employment and income through IMPLAN The effect of hunting is incorporated into the dispersed recreation coefficient Both county receipts and Forest Service expenditures and revenues are estimated through the FORPLAN model

COMMENT NO. 44: Although the Plan states that the IMPLAN model was utilized, no mention is made of how employment and income multipliers are calculated. There are multipliers listed on page B-53 of DEIS Appendix B, but no information on their derivation is given

FOREST RESPONSE:

The response coefficients for categories of employment and income were derived using the IMPLAN model data base for all types of economic activities related to the Forest for the counties in the area of influence The IMPLAN model calculates the change in these two variables per unit change in output Appendix B has been revised to include more detail on this process

COMMENT NO. 45: How can Alternative E result in an increase of one job in the red meat processing sector (Table IV-61) when permitted livestock are reduced by more than one-third?

FOREST RESPONSE:

Alternative E is just one example of this apparent problem. Other alternatives which provide for decreased grazing also show increases in the red meat sector. This table is somewhat misleading; however, it is accurate IMPLAN provides changes in terms of direct, indirect, induced, and total jobs. DEIS Table IV-61 represented total jobs. The interrelationships of industries within the economy cause the jobs by sector to reflect not only the effect of the direct input of that sector but also the indirect and induced jobs from all other sectors. In fact, the changes in the Forest grazing program have very little effect on the local (10-county) economy

Due to this confusion, and the fact that it is not very meaningful, Table IV-61 does not appear in the FEIS.

ANALYSIS - ECONOMICS

COMMENT NO 46: The economic suitability of harvesting timber in roadless areas needs to include the cost of building roads and the cost of lost opportunities from developing a roadless area.

FOREST RESPONSE:

The economic evaluation of all forest areas for timber harvest includes the cost of road construction, including a tradeoff analysis for roadless areas Appendix B covers the economic analysis including costs and returns for timber; Appendix C, Table C-8, discusses results of the trade off analysis for roadless areas. However, the "cost" of opportunities lost as a result of developing a roadless area often has no common interpretation because different people have different feelings as to what opportunities may or may not be lost This subject is discussed in Chapter I of the FEIS under the Roadless Areas issue and in Chapter IV in the Social section.

COMMENT NO. 47 The Forest Service analysis of whether or not to develop roadless areas generally does not account for the loss of future options and so is biased toward development.

FOREST RESPONSE:

The draft Plan retained about half the number and acres of roadless areas in an unroaded condition as does the final Plan. Retention of specific roadless areas was done to respond to all of the identified issues shown in the Roadless Area and other issues in FEIS Chapter I Some roadless areas have high public interest; this was also a determinant in retaining roadless areas in an unroaded condition. Timber, wildlife, big game, recreation, and water resources and values are important considerations in resolving the roadless issue Retaining future options is only one consideration among many values in

future roadless area management; one should note that the final Plan retains all or parts of 16 areas in roadless condition.

COMMENT NO. 48: Has the Plan priced the value of the roadless areas in attracting new industries to the area or in the quality of life for local residents? In other words, what is the opportunity cost residents would be willing to pay to keep the roadless and old growth resources?

FOREST RESPONSE

The value of the roadless areas on the Forest in attracting new industries to the area was not priced or evaluated in the Plan. However, a detailed and site-specific analysis of the inherent resource values of each roadless area is presented in the FEIS Appendix C A discussion of the effects of the alternatives related to roadless areas and timber management on lifestyles and social organizations is found in FEIS Chapter IV.

COMMENT NO 49. To assume that stumpage prices will rise 1 percent per year for 50 years is unrealistic when historically the stumpage price increases have been 2 to 3 percent per year.

FOREST RESPONSE.

While stumpage prices vary and certainly often have been greater than 1 percent per year, the analysts follow Forest Service regional guidelines which are to use 1 percent real price trend for harvest scheduling. This is a rate that is above that of inflation which is also considered in the analysis.

COMMENT NO. 50: The socioeconomic tables presented on page II-142 of the DEIS seriously distort PNV.

FOREST RESPONSE:

Present Net Value (PNV) is the primary quantitative measure of economic efficiency for each alternative, and it provides a partial estimation of net public benefits. As defined, PNV is the sum of all market and nonmarket benefits (priced outputs) minus the sum of all costs incurred in realizing the benefits (discounted) to the present using a discount rate of 4 percent) A higher PNV often means a greater total NPB, unless modified by net nonpriced outputs.

Because of additional analyses and changing information, the PNV displayed in the DEIS table on page II-142 is reflected in updated form in Table II-33 of the FEIS Among the alternatives, PNV ranges from a high of about $1,076 million (Alternative I) to a low of about $818 million (Alternative E/M). Total discounted value of priced outputs and discounted costs follow the same trend Refer to Chapter II of the FEIS and Appendix B for more discussion of PNV.

COMMENT NO. 51: If an economic evaluation is going to be used to represent net public benefits, then all resources need to be evaluated on an equal basis.

FOREST RESPONSE:

All criteria important to the decision maker are not part of economic efficiency analysis (PNV). Appropriate methods to quantify certain nonpriced values (for instance, visual quality, old growth, and snag habitat) have not been developed These values need to be considered in qualitative and subjective terms.

PNV is considered a valid comparator because it puts many of the priced resource values, both market and nonmarket, on similar terms for the purpose of comparison. However, both market and nonmarket priced resources have factors besides economic considerations. As with unpriced values, priced resources should also be evaluated qualitatively Therefore, PNV should be, and is, only one of the criteria used to evaluate resource

NFMA regulations charge the Forest Service with identifying the alternative which comes closest to maximizing net public benefits (NPB). NPB represents the overall value to the nation of all outputs and

positive effects (benefits) whether they can be quantitatively valued or not. Net public benefits include both priced and nonpriced resource outputs, less all costs associated with managing the area. All priced outputs and all costs associated with managing the Forest are included in the calculation of PNV. The net subjective values of the nonpriced outputs must be added to this in order to arrive at the overall NPB of an alternative. The decision maker then chooses the alternative with the greatest NPB as the Preferred Alternative.

COMMENT NO. 52: We have a concern about inequitable treatment given to various resources. Use of *allowable cut effect* and *4 percent discount rate* affects the economic benefit of intensive timber management, including old growth harvest. The Plan underestimates the value of noncommodity resources for PNV quantification.

Much of the proposed Plan is based on present net value of timber.

FOREST RESPONSE:

The present net value calculations considered those values for which a market price exists or could be assigned. On the Umatilla, the priced benefits included timber, recreation, wildlife, fisheries, and range. Refer to Chapter II of the FEIS for a discussion of the role of PNV calculations in the decision-making process. A review of Tables II-31 and II-33 shows the benefits and costs on the Forest; recreation (including wildlife and fisheries-related recreation) is a significant value on the Forest, as are range and commercial fisheries. PNV is used as a basis for comparison of alternatives, and is used by the FORPLAN Model to select between-treatment options Basically, PNV is only one measure of how well a given alternative contributes toward net public benefits; it is an incomplete measure since not all benefits can be valued with the dollar measure. PNV is only one criterion used in the decision-making process. All of the issues are important in the planning process Resolution of the issues is the basic driver of the process. If PNV were the only criterion, the Forest would have selected an alternative with a substantially higher PNV. The selected alternative is one that best maximizes net public benefits while responding effectively to all the public issues, in the judgment of decision makers.

Although the allowable cut effect is an established concept, relying on complete follow through with cultural activities that have been planned, it has a very minor effect on harvest scheduling on the Umatilla Forest. A 4 percent real discount rate was used as directed by the Washington Office, and its use is supported by the rationale presented in the paper entitled "Discount Rates for Long-term Forest Investments."

COMMENT NO. 53: Fish and wildlife losses are believed to be large, both cumulatively and for certain site-specific management actions. Failure to count these impacts as costs in the Plan PNV analysis provides an implicit subsidy to the management activities, which causes the adverse effects. Losses should be measured relative to the existing condition, not to future condition.

FOREST RESPONSE:

Fish and wildlife are very broad topics. Each is part of one or more issues or concerns. As documented throughout the process, there are generally gains for the fishery resource. For wildlife, both "benefits" and "losses" are projected

The long-term and cumulative changes in habitat and populations for wildlife and fish have been considered, analyzed, and are addressed in Chapters II and IV of the FEIS In some cases, such as for mature and old growth-dependent wildlife species, significant losses are anticipated to result from implementation of the Forest Plan (see Tables II-7 and II-8) The effects on the old growth related wildlife are not reflected in PNV but are described and shown in resolution of the issues and concerns Most other wildlife is handled in a similar way. Changes in big game and fish habitat and estimated changes in populations have been reflected in terms of fish and wildlife user days (WFUD's), as displayed in Table II-6; changes that have been reflected as costs (or reduced benefits) in the PNV analysis are discussed in Section IV of FEIS Appendix B Effects of change on big game and fish are reflected in PNV estimations and described in the documents.

COMMENT NO. 54: PNV figures are biased away from fish and wildlife values and toward timber. There is reason to believe that the Loomis and Sorg results underestimate applicable wildlife values. The Travel Cost Method (TCM) of determining demand measures only the recreation use component. Other recognized sources of value include existence of the resource, option to make future use of it, and ability to pass on the resource to future generations. For certain ecosystems and some species of fish and wildlife—especially those that are well publicized or whose existence is threatened—we would expect these components to add significant value. They are ignored in your evaluation process. Noncommodity resources, particularly wildlife, had their economic values reduced in the Resource Planning Act (RPA) process.

FOREST RESPONSE:

The economic values for all resources (including fish and wildlife user days (WFUD's)), such as hunting, wildlife observation, etc., were established by the Washington Office and are included in the economic analysis section of Appendix B of the FEIS. These RPA figures have been used throughout the Forest Service in the nationwide planning effort, providing both consistency and a basis for comparing alternatives. It can be argued that the established figures are too low, but they are consistent on all forests As indicated, the established economic values measure only the recreation use components. Other values (such as existence of wildlife) and the options to pass these resources on to future generations have no priced value and are not considered in the PNV analyses; however, these wildlife and fish values have been considered in other analyses in the planning process (see FEIS Chapter IV).

COMMENT NO. 55: The Forest chose not to use the market prices for the only two market-priced goods dealt with in the economic analysis (timber and range) but instead used considerably higher estimates of value. The 1985 Resource Planning Act (RPA) value of an animal unit month (AUM) was $5.19; the benefits/costs should be recalculated using this figure. Page II-133 shows range benefits at $25,650,000 for 59,000 AUM's in Alternative F. This benefit is more than the $15 28 or $13 91 value per AUM given on page II-136. All of the benefits seem high even if the figures had not been discounted. How did the Plan obtain the large benefits, and in particular, the value of AUM's (over $400 per AUM)?

FOREST RESPONSE

The value used in the analysis was $15 28 per AUM The value is derived from a 1981 Colorado State University study (C Kerry Gee) of the economic values and impacts of grazing on Federal rangelands. The noncash benefit used in the alternative analysis was the AUM value less the charged grazing fee ($1.37 per AUM at that time), resulting in a total of $13 91/AUM. A detailed discussion of this item can be found in the Economic Comparison section of Chapter II and in section IV of FEIS Appendix B.

The large benefits described in Table II-34 are the discounted costs and benefits for the entire planning horizon (150 years). Dividing the $25 65 million by 150 years, and then by 59,000 AUM's, results in a discounted benefit of about $2.90/AUM.

COMMENT NO. 56: Where is the economic evaluation of the elimination of animal and plant species? The Plan underestimates the value of noncommodity resources for PNV quantification Enhancements represent real benefits and impacts produce real losses.

FOREST RESPONSE:

The intent of the Forest Plan is certainly not to eliminate any animal or plant species. The concern about economic effects of eliminating animal or plant species is outside the scope of the Plan The Forest is unaware of any methodology for establishing the economic value of most plant or animal species; some species are valued through the market system, but most are not. Habitat for plant and animal species is being managed by virtue of resolving the issues in the Forest Plan, an evaluation of which can be found in Chapters II and IV of the FEIS and Chapter 3 of the Forest Plan The Forest planning team is not aware of any species that have been eliminated as a result of past management practices; certainly it is the intent of the Plan to avoid any such occurrence

COMMENT NO. 57: Based on an obsolete 1980 Fish and Wildlife Service study, hunting and fishing days are valued at an average of $26.00 per day. For the 551,000 hunting and fishing days shown in the Plan, this

would equal $14,326,000. Other fish and wildlife values include the commercial fish catch and nonconsumptive wildlife values. An acknowledgement of these values must be shown in the EIS.

FOREST RESPONSE:

The values used in the economic analysis are contained in Section IV of FEIS Appendix B Table B-IV-6 displays the 1985 RPA benefit values shown in 1982 dollar amounts

COMMENT NO. 58. The total economic picture of demand "benefits," etc., must be presented so the public can weigh the subsidies fairly against the costs of ecosystem and archeological destruction.

FOREST RESPONSE:

The purpose of Forest planning is to show the benefits and costs of resource management. The purpose is inherent in the concept of net public benefits (NPB) The final EIS is a complete documentation of the benefits, costs, and tradeoffs (as well as the Forest planning team can describe them). A review of FEIS Chapters I, II, and IV provides the overall picture.

ANALYSIS - CUMULATIVE EFFECTS

COMMENT NO. 59: It is inadequate for the Forest Service to assert that it has assessed cumulative impacts while offering absolutely no evidence that it has made any such consideration.

FOREST RESPONSE:

Chapter IV of the FEIS encompasses the physical, biological, social and economic effects (or consequences) resulting from alternative ways of managing the Forest Some of these effects are cumulative. Cumulative effects, defined as those resulting from incremental impacts or action(s) continuing through time are also presented in Chapter IV

COMMENT NO. 60. The cumulative supply situation is a critical issue that must be fully analyzed in the FEIS and considered when setting the allowable sale quantity in the final Forest Plan

FOREST RESPONSE:

Timber supply is an important factor in the timber issue described in FEIS Chapter I The supply (and demand) situation was analyzed for the area of influence and reviewed for the regional and national perspective in FEIS Chapter III, Forests Both the timber and other issues, and supply and demand study results, were used in determining the final ASQ level shown in the Forest Plan.

COMMENT NO. 61: The Forest Service should not adopt any final plan until the cumulative effects of all draft, revised draft, and supplemental national forest plans are known by the public.

FOREST RESPONSE.

The Forest Service, Region 6 (Oregon and Washington), has published a draft of "Forest Plan Aggregate Outputs and Effects - Staff Paper for the Regional Forester," dated October 1, 1988 The paper reflects some discussion with interested publics One may assume that the Regional Forester will make a similar review upon completion of the final plans and as a part of the RPA process

COMMENT NO 62. The USFS should develop separate IMPLAN input/output (I/O) models for Oregon and Washington to permit assessment of the overall impact of the 19 national forest plans being developed.

FOREST RESPONSE:

In developing their Forest Plan, each national forest in Oregon and Washington used IMPLAN models for their local assessment of employment and personal income A regional perspective was developed through an aggregate assessment of draft Forest Plans (see comments 41 through 45 above).

The Forest did not do a separate state assessment for several reasons For one, forest planning is done on a Forest basis. Also, it is difficult to address the timber impacts when log flows are going across state boundaries within the local area. If data is needed for each state, the Washington portion can be approximated by using output data from the Pomeroy District and Oregon estimates from the remainder of the Forest The output data can be multiplied by the appropriate coefficients shown in Appendix B to get estimates of employment and personal income impacts. The data should be used to compare alternatives and not as an expectation of actual employment or personal income

PROJECT PLANNING AND IMPLEMENTATION

COMMENT NO. 63: The Plan should develop an effective public information program, so the public can be made knowledgeable about why activities are needed and what the future result will be in these areas.

FOREST RESPONSE:

A legal requirement by NEPA and NFMA, throughout the Forest planning process and later Forest Plan implementation, is to actively involve the public in the decision-making process Public participation is a current requirement and will continue following Forest Plan implementation The Forest has worked closely with interested publics in developing the final Plan; in identifying issues and building alternatives; in reviewing the draft documents, and soliciting input The Forest expects to discuss the final Plan with affected and interested publics when it is published The Forest also expects a high level of public involvement in individual projects, Plan monitoring and evaluation, and in recommending changes in the Plan. The Forest-wide Standards and Guidelines found in Appendix D of the FEIS and Chapter 4 of the Forest Plan (General Procedures and Community Development/Human Resources sections) state the requirements.

COMMENT NO. 64: "Successful implementation of the Forest Plan requires and is dependent on a high level of internal resource coordination The timber sale program provides the major vehicle through which coordination will be accomplished (Plan, p. 4-30)". What is the magnitude of "a high level"?

FOREST RESPONSE·

Implementation of most Forest projects requires an interdisciplinary approach due to interrelationships and potential effects of resource management activities. Project interdisciplinary teams (IDT's) typically include participation from a fish or wildlife biologist and a range of other resource management specialists. To insure that the intent of the Forest Plan is met, the sale program and other individual projects are designed, developed, completed, and monitored through the IDT process The timber sale and associated road construction programs are two of the principle activities on the Forest with potential for adverse impacts on other resources. Resource specialist involvement during the project planning process, including that for all timber sales, is a must and essential in order to meet all resource goals and objectives of proposed projects: Therefore, the timber program is an important basis for coordinating management of resources, and a "high degree" of coordination is needed.

COMMENT NO. 65· The Sikes Act provides that forests must jointly develop, with the state, a statewide comprehensive plan, and provide funding for fish and wildlife improvements. This plan is years overdue. We would like to work with you in the development of such a plan

FOREST RESPONSE.

In compliance with the Sikes Act, the Forest annually develops a list of wildlife habitat improvement projects in cooperation with local state wildlife biologists. The information is then assembled in the Regional Office into a statewide plan, which merely identifies habitat improvement work that needs to be done and does not necessarily provide or guarantee a source of funding.

The Forest would not only appreciate the opportunity to continue to cooperate with the states in identifying needed wildlife habitat improvement projects but, more particularly, the Forest would appreciate cooperation in identifying projects in which the state agencies can participate financially The proposed habitat improvement project needs which are identified in Chapter IV of the FEIS can be amended or revised on a periodic basis as additional or better information becomes available. Cooperatively-funded projects have a much greater success in being funded.

MITIGATION

COMMENT NO. 66: It is understandably difficult to prepare a thorough discussion of mitigation measures; however, NEPA has been interpreted to require such a discussion, which must be more than a mere listing of generic mitigation measures. While the discussion contained in Appendices D and E certainly seem comprehensive, the discussion of mitigation measures in the DEIS seems lacking.

COMMENT NO. 67: The Forest should clearly disclose methods of mitigating damage to public resources.

FOREST RESPONSE:

Mitigation measures consist of a broad scope of actions that avoid, minimize, rectify, reduce, or compensate for environmental impacts. Each can occur at different stages in the planning and implementation process including preactivity, during activity, and postactivity.

The Forest approach towards mitigation is described in FEIS Chapter II. Essentially, the Forest has taken the broadest possible view of mitigation and has incorporated it at each step in the planning process The final Plan has built-in (preactivity) mitigation measures, in varying degrees, through Forest-wide Standards and Guidelines, management requirements, management area direction, and the final Plan design, including project proposals and the level of funding. As a result of public comment on the draft Plan, many of the elements have been revised and strengthened in the final Plan.

Concern expressed in the comment appears to be related to site-specific measures (during-activity and postactivity mitigation). FEIS Chapter IV provides discussion of environmental consequences and specific identification of proposed mitigation measures, including Best Management Practices (BMP's). Additional discussion of mitigation including BMP's appears in Appendix E. Both Chapter IV and Appendix C have had substantial revisions. Discussions of effectiveness of, and uncertainties about, mitigation, including BMP's, have also been expanded.

Most site-specific consequences will be addressed in subsequent project analysis and plans in which the physical setting is known. Additional mitigation measures will be provided through operating permits, plans, and contracts for the projects. While it is true that application of the restrictions and constraints stated in the Forest-wide Standards and Guidelines will help insure preactivity mitigation, no amount of written standards will replace careful planning, proper design, and close scrutiny of project activities. Finally, activities and their effects including effectiveness of mitigation will be monitored, as shown in the Forest Plan, Chapter 5. The public will continue to play a part in Forest planning as it proceeds in supplemental management plan development, such as access management, and in individual project design including mitigation through the NEPA process In addition, the Forest expects to have the public involved in monitoring activities

COMMENT NO. 68: Some attempt should be made in either the EIS or appendices to evaluate and explain the effectiveness of the proposed mitigation measures.

FOREST RESPONSE:

FEIS Chapter IV and Appendix E provide identification and discussion of proposed mitigation measures, including BMP's. Each has had substantial revisions Discussions of effectiveness of and uncertainties about mitigation, including BMP's, have also been expanded. Monitoring and administrative reviews of implementation of the management direction stated in Chapter 4 of the Forest Plan, and the individual projects, will help to determine the true effectiveness of the proposed mitigation measures

COMMENT NO. 69: If the Forest chooses an alternative that creates negative socioeconomic impacts, it should thoroughly discuss possible mitigation measures in order to avoid conflicts with Federal and state job and community assistance programs.

FOREST RESPONSE:

The Forest manages lands and resources and provides benefits from management of the mix of resources, shown in the different alternatives. Management of the land and resources will have social and economic effects The socioeconomic impacts resulting from the Forest Plan and other alternatives are discussed in Chapter IV of the FEIS; however, the Forest does not have the capability to mitigate adverse social and economic effects. The Forest can adjust the planned management and mix of resource outputs (by developing or choosing another alternative), and has therefore attempted to fairly and equitably resolve the issues so that potential adverse consequences are minimized.

MONITORING

COMMENT NO. 70: The Forest should monitor more than just its ability to carry out its own program, and should focus on monitoring actual damage to public resources.

FOREST RESPONSE:

"At intervals established in the Plan, implementation shall be evaluated on a sample basis to determine how well objectives have been met and how closely management standards and guidelines have been applied" (36 CFR 219.12(k)). The activities, practices, or effects identified in the monitoring plan as the most likely causes of damage to Forest resources will be monitored and evaluated at scheduled intervals. Adjustments can be made in the Forest Plan or project activities if damage has occurred.

COMMENT NO. 71: A budget to review size, dispersal, and shape of created openings is lacking. The budget for monitoring timber harvest activities is not adequate.

FOREST RESPONSE:

The budget figure was inadvertently omitted in the draft Forest Plan. An amount has been added to the monitoring plan to cover this monitoring activity. The costs displayed under the timber program monitoring plan in Chapter 5 of the Forest Plan are the estimated costs for compiling and analyzing records, for occasional field reviews of the degree to which regional and Forest-wide Standards and Guidelines are being met, and for preparing reports The costs do not include field work such as for stand exams and sale administration; those costs are included in reforestation costs, timber sale costs, etc.

FOREST MANAGEMENT/ENVIRONMENTAL QUALITY

COMMENT NO. 72: Information, inventory, and research needs are identified for many subjects, including fish, water quality, range, and riparian zones. Presumably, as mentioned on draft Plan page 2-14, many items can only be done when funds become available. How many of the information, inventory, and research needs and studies listed in the Plan can reasonably be funded during the planning period? Have these needs been prioritized? A schedule for when the studies and evaluations would be done should be included in the FEIS/Plan.

FOREST RESPONSE:

Inventory and research is a continuing process; several items mentioned in the Information, Inventory, and Research Needs section in Chapter 2 of the Forest Plan have already begun. These include a 10-year forage consumption study of livestock and big game animals at the Starkey Experimental Forest near La Grande, and ongoing studies of production on transitory ranges in northeast Oregon. The riparian area classification effort was started on the Forest in 1988 and is scheduled for completion in 1992.

The Forest Plan implementation can be started without completion of identified inventories in Chapter 2. However, some updated and new inventories will be needed during the life of the Plan. The intent is for these to sharpen Forest Plan direction, support completion of "sub-plans" and adjust the Plan for changing conditions (if needed). Other inventories are not essential for implementation, but they would improve the overall Plan quality if the information were available. Accomplishing identified research will improve future planning capabilities and enhance overall land management

Inventory and research needs have been updated and ranked by priority in the Forest Plan Funding for needed inventories is expected to be received. However, if "shortfalls" in budget occur, Forest managers will have to decide on a case-by-case basis what items cannot be funded and completed at the desired and necessary level. Some inventory activities may be rescheduled Where budget "shortfalls" necessitate changes in the Forest Plan, amendments or revisions will be accomplished by procedures described in Forest Plan Chapter 5 In the case of research needs, the Forest prioritization is often subject to a regional or national prioritization; available funding and levels of need/interest in academia and Forest Service research tend to reduce the Forest capability to complete desired items as projected.

COMMENT NO. 73: Implementation of the final Plan is entirely dependent on appropriation of adequate funds by Congress. How many of the monitoring activities can reasonably be funded? It is essential that the Plan display information as to which programs will be maintained and which will be cut back with a budgetary shortfall. What priorities and guidelines will be employed in dealing with budgetary shortfalls? What are the possible effects and management implications of these priority decisions? What critical output targets will not be met and how could the alternative be modified accordingly? What will happen to such items as water quality monitoring if funding doesn't come through?

FOREST RESPONSE:

The items listed in the monitoring plan in Chapter 5 of the Forest Plan, including funding levels, are considered necessary for implementation of the Forest Plan. Budget requests reflecting costs of implementing the Plan have been and will continue to be submitted for consideration for funding However, the level of funding and priorities for expenditure in individual resource areas are determined by Congress annually at the national level. Based upon past funding levels, and the current national concern with balancing the federal budget, it is entirely possible that operating funds will be less than requested for full Plan implementation.

Should that occur, Forest managers will have to decide on a case-by-case basis what items cannot be funded and completed at the desired and necessary level The Forest has some latitude to reprogram funds at the local level to assure that legal requirements and provisions of the Plan are met The Forest Service is currently working with Congress to develop additional reprogramming authority Monitoring in some or all areas may have to be commensurate with the level of activity or funding. "Key needs" may be developed that would be completed or accomplished, regardless of the funding level, while other items are prioritized for nonaccomplishment For example, monitoring of water quality to meet state water quality standards will occur under all funding regimes, but the frequency or timing of some resource use inspections could vary with the level of funding received In many cases, the Forest may be able to reschedule a project or in some cases a monitoring activity and still meet the requirements of the Plan.

As indicated, much of the decision may be dictated by the levels of funding Congress appropriates in individual resource areas. If the required funding level for Plan implementation is significantly reduced (20-30 percent or more), the Forest management team will have to review the effects Where budget shortfalls necessitate changes in the Plan, amendments, revisions, or other changes may occur as described in Forest Plan Chapter 5.

COMMENT NO. 74: From an examination of the Plan, it could not be ascertained what percentage of the current and proposed Forest budgets are to be spent on wildlife

FOREST RESPONSE·

Table A-13 included as part of Appendix A of the Forest Plan, displays the proposed budgetary needs for fish and wildlife The table has been revised and updated in the Forest Plan to add detail and to more clearly identify the budget requirements for each of the resources

COMMENT NO. 75: Assurances must be made that Plan intent and on-the-ground results will be the same

FOREST RESPONSE.

Chapter 5 of the Forest Plan describes the management direction for implementing the Plan As stated in the chapter, implementation of this direction is the key to translating the goals, objectives, and management requirements stated in the Plan into results on the ground. The authority of the Forest Supervisor to amend or revise this plan whenever he determines that conditions warrant a change is also stated here

COMMENT NO. 76: What will happen if the Forest cannot be successfully "fully regulated"? What if a mistake is made? What happens if the Plan errs on the side of too much management, too much timber harvest, too much faith in the productive power of intensive silvicultural management practices and improved genetic strains and even-aged management? What if we err on the side of conservative harvest levels related to natural productivity indexes, natural mixed species stands, and even-aged stand management?

FOREST RESPONSE:

A number of "safeguards" are built into the planning process including monitoring and evaluation, Plan changes or revision, and public involvement As stated in the planning regulations (36 CFR Part 219 12(k) Monitoring and Evaluation), the Forest Plan will be evaluated as scheduled in the monitoring plan in order to determine how well the plan objectives have been met, how closely management standards and guidelines have been applied, how successfully projects have been implemented, and how valid planning assumptions are Based upon this evaluation, the Forest interdisciplinary team shall recommend to the Forest Supervisor such changes in management direction, either through revisions or amendments to the plan as are deemed necessary The Forest Supervisor may revise or amend the Forest Plan whenever he determines that conditions warrant a change according to the process described in Chapter 5 of the Forest Plan.

Plans are scheduled to be revised every 10, or at least every 15, years At that time, the validity of management yield assumptions will be analyzed and updated if needed, and a new allowable sale quantity and long-term sustained yield calculated. Earlier in the planning period, results from a new integrated resources inventory will be available to assist in this process Included will be data from permanent growth and yield plots in managed stands If intensive cultural activities are not funded, the inventory will reflect the lower-than-expected growth rates, and adjustments will be made

Public interest in Forest management is high and increasing; the Forest expects a high level of public involvement and participation in reviewing individual projects, in plan monitoring and evaluation, and in engendering Plan changes. The public review will help to insure that "things go right "

COMMENT NO. 77: The DEIS should address the disposal of solid waste generated on the Forest.

FOREST RESPONSE:

Forest solid waste management practices are guided by regulation in the Code of Federal Regulations and by Forest Service Manual policy. In most situations, compliance with criteria in 40 CFR 257 is possible through application of recommended standards in 40 CFR 241. The Forest currently disposes of all solid waste materials at state-approved sites off National Forest System lands There are no solid waste disposal sites on the Umatilla National Forest nor is there any intention for having them in the future (see FSM 7460 Umatilla Supplement No 1 dated December 1969)

RESEARCH

COMMENT NO. 78: A suggested addition under "protection-pest management" in the section on "information, inventory, and research needs" should read, "Integrate pest management, silvicultural, and other forest management practices for prevention or reduction of timber losses caused by insects and diseases."

FOREST RESPONSE:

Chapter 2 of the Forest Plan has been revised to include your suggestion. The Forest and Range Sciences Lab at La Grande has a major share in the research responsibility for this topic and currently has several studies underway.

REFERENCES

Crandell, Derrick A. How will americans play outdoors in the 21st century? In: American Forests. American Forestry Association. Washington, DC; March/April: Vol. 94 No. 384; 1989: 22-25.

Lyon, L. J. Habitat effectiveness for elk as influenced by roads and cover. Journal of Forestry. 77(10): 658-660, 1979

Nikles, D. G. Breeding for growth and yield Unasylva. 24(2-3): 9-22; 1970

Snyder, E. B. 15-year gains from parental and early family selection in longleaf pine. Proc. 12th South. For. Tree Imp Conf.; 1973; 46-49.

Theisen, P. A. Maintenance of genetic diversity and gene pool conservation of commercial and potentially commercial tree species in the Pacific Northwest. R-6 Tree Improvement Paper No. 22, 1980.

Theisen, P. A. Gains and benefits from tree improvement, summary of results through 1985. R-6 Tree Improvement Paper No. 1A; 1986.

Thomas, J. W.; Leckenby, D. A ; Pedersen, R J [and others]. Habitat effectiveness index for elk on Blue Mountain winter ranges 1988. 28 p.

Thomas, Jack W. and others. Wildlife Habitats in Managed Forests the Blue Mountains of Oregon and Washington. Agric Handb. 553. Portland, OR. U.S Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station; 1979. 512 p.

U.S. Laws, Statutes, etc., Federal Register, 40 CFR 1500 - 1508 Council on environmental quality. Act of July 1, 1979.

LETTERS FROM ELECTED OFFICIALS, FEDERAL AND STATE AGENCIES, AND INDIAN TRIBAL GOVERNMENTS

JOHN MILLER
FIRST DISTRICT, WASHINGTON
COMMITTEES
ARMED SERVICES
MERCHANT MARINE AND FISHERIES

15

Congress of the United States

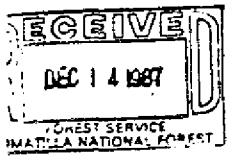
House of Representatives

Washington, DC 20515

1224 LONGWORTH H.O.B.
WASHINGTON, DC 20515
(202) 225-6311

DISTRICT OFFICES
2688 FEDERAL BUILDING
915 SECOND AVE.
SEATTLE, WA 98174
(206) 442-0277

WASHINGTON PLAZA C
11607 20TH CT. E.
SPOKANE, WA 99206
(509) 467-1700



December 9, 1987

James Lawrence
Umatilla National Forest
2517 S.W. Hailey Ave.
Portland, OR 97801

Dear Mr. Lawrence,

On October 5, 1987 I wrote to you regarding the treatment of potential Wild and Scenic Rivers in the final forest plan for the Umatilla National Forest.

I have enclosed a copy of my letter as well as Supervisor Sonny O'Neal's response to a similar letter concerning the Wenatchee National Forest. Mr. O'Neal's assurance that potential Wild and Scenic Rivers were being reviewed to determine their highest possible classification was encouraging. The other five Forest Supervisors I wrote have all responded to my letter.

I look forward to learning of your plans for the treatment of Wild and Scenic Rivers in the Umatilla National Forest.

Yours truly,

John Miller

John Miller
Member of Congress

JM:cbl

JOHN MILLER
FIRST DISTRICT, WASHINGTON
COMMITTEES
ARMED SERVICES
MERCHANT MARINE AND FISHERIES

Congress of the United States

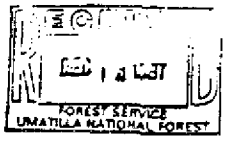
House of Representatives

Washington, DC 20515

October 5, 1987

1224 LONGWORTH H.O.B.
WASHINGTON, DC 20515
(202) 225-6311

DISTRICT OFFICES
2688 FEDERAL BUILDING
915 SECOND AVENUE
SEATTLE, WA 98174
(206) 442-0277



James Lawrence
Umatilla National Forest
2517 S.W. Hailey Ave.
Portland, OR 97801

Dear Mr. Lawrence:

I am writing to express my belief that the evaluation of potential Wild and Scenic Rivers is one of the most important issues in the current forest planning process. The evaluation of rivers in our forest plans form the baseline for future Wild and Scenic River designation, just as RARE II formed the baseline for wilderness designations. I have been informed that treatment of Wild and Scenic Rivers in Washington has varied widely from National Forest to National Forest. Some plans have done a very good job of evaluating rivers, while others have given only the most cursory attention to the matter.

It is particularly important to have a sense of the range of rivers which Congress may wish to consider protecting under the Wild and Scenic Rivers Act when your planning team is classifying segments of rivers. I understand that Forest Service planning guidelines already instruct the National Forests to consider rivers listed under various inventories of rivers for Washington State as possibly in need of protection. In recent meetings, I have learned that a number of Forests have classified river segments as "recreational" that appear to qualify as "scenic." This seems to arise from focusing on the amount of development along the rivers strictly within Forest Service boundaries. The Wild and Scenic Rivers Act, however, was intended to protect the range of rivers across the nation, not just segments within National Forests. Most of the river segments within the Forests, I believe, qualify as scenic; it is the river segments outside the Forests that are recreational.

I have long had an interest in protecting rivers in Washington State. I urge you to pay close attention to both the internal guidelines developed by the Forest Service and the Wild and Scenic Rivers Act to take full advantage of this opportunity to protect an essential part of our Northwest heritage.

Thank you for your attention to this issue. I look forward to learning that your Forest Plan does include full recognition of Wild and Scenic River values.

Yours truly,

John Miller
Member of Congress

JM:cb

N - 335

N - 336

2303

RECEIVED
MAR 28 1988
FOREST SERVICE
UMATILLA NATIONAL FOREST

DARWIN R. NEALEY
9TH DISTRICT
P.O. BOX 265
OLEX, WA 99143
TEL. (509) 963-2488

LEGISLATIVE:
HOUSE OFFICE BLDG. ROOM 412
TEL. (206) 786-7863

COMMITTEES

AGRICULTURE
(Ranking Republican Member)
WAYS AND MEANS
(Appropriations Sub-Committee)
Assistant Ranking Republican Member
LOCAL GOVERNMENT

House of Representatives
STATE OF WASHINGTON
OLYMPIA

March 25, 1988

Mr. James Lawrence, Forest Supervisor
Umatilla National Forest
2517 SW Hailey Avenue
Pendleton, Oregon 97801

Dear Mr. Lawrence,

I appreciate your past contact with me in regards to the land use planning of the Umatilla National Forest. I'm sorry to be so slow in responding, but the end of session was very hectic.

As you well know, the economy in Eastern Washington and Oregon is critically low. After checking your draft and personally talking with representatives of the Cattlemen's Association, the timber industry, Asotin County Port District and general business persons at a Rotary Club meeting I strongly feel the Multiple Use Alternative Plan as promoted by the above people should be considered and adopted.

Being a legislator and representing the interests of all the people, I must weigh objectively, all the pros and cons of an issue as well as representing the environmentalists and preservationists.

I could go into detail on a number of aspects of the proposal, but I know you are well acquainted with it. Briefly, we must conserve the money for education, the preservation and sustenance of the forest, mineral exploration and access, recreation, deer and elk habitat, access to grazing by cattlemen, and probably the most important of all is the contribution to the economy of the community, country and state.

The Multiple Use Alternative Plan is reasonable in that it provides conservation, it protects the environment and still lets us make well planned economic use of it's resources. Please give this your utmost consideration.

Very Sincerely Yours,

Darwin R. Nealey
State Representative
9th Legislative District

DRN:mt

THORNE
UMATILLA, UNION AND WALLOWA COUNTIES

TO ADDRESS INDICATED
...Courthouse
...Oregon 97210-1347
...Avenue, Rm. 506
...Oregon 97801

OREGON STATE SENATE
SALEM, OREGON
97310

628
RECEIVED
MAR 14 1988
FOREST SERVICE
UMATILLA NATIONAL FOREST

March 11, 1988

Mr. James Laurence
Forest Supervisor, Umatilla National Forest
2517 S. W. Hailey Avenue
Pendleton, Oregon 97801

Dear Jim:

I would like to join ranks with the many persons who are now commenting on the Forest Plan for the Umatilla National Forest.

I strongly advocate the multiple-use concept and as a member of the Oregon Legislature, I wholeheartedly endorse the efforts being put forth by the state to help develop a plan for the Umatilla Forest.

We are at the threshhold of an opportunity to approve a plan which will assure a strong economic base for the wood products industry in northeast Oregon. I recommend that the plan be reviewed in all aspects, as it impacts our local, regional, national and international economy. We are fortunate to have a source of pine which should be maintained to help support the processing of pine forest products in our region and I believe we should examine as a first priority all aspects of the impact on our economy directly related to the wood products industry.

Specifically, I believe we should maintain the multiple-use concept in establishing our animal unit months for grazing at approximately 60,000 per year. In addition, I would recommend a harvest at approximately 170 million board feet, including a sustainable yield of ponderosa pine near a 35 million board foot level. Obviously, because of the unique position of the ponderosa pine in our area, levels between 35 and 40 million board feet would be a desirable goal.

Certainly the recreational activities are important in our national forests and it is my belief that through proper management of access areas, acceptable levels of wildlife can be maintained within the uses set forth in the multiple-use concepts.

I appreciate this opportunity to offer these comments and observations and again would offer myself as a resource for the sake of discussing a long-term management plan at any time you would be interested in doing so.

Sincerely,

Mike Thorne
State Senator

MT:kr

N - 337

N - 338

NE (GENE) D TIMMS
NEY LAKE MALHEUR GRANT BAKER
ON MORROW COUNTIES
RICT 30
TO ADDRESS INDICATED
se Chamber
m, Oregon 97310-1347
n Court
, Oregon 97310

7045

OREGON STATE SENATE
SALEM, OREGON
97310-1347

Apirl 8, 1988

Mr. James Lawrence, Forest Supervisor
Umatilla National Forest
2517 Sw Hailey Ave.
Pendleton, OR 97801

Dear Mr. Lawrence:

I am writing to promote the Multiple-Use Alternative Plan for the Umatilla National Forest.

Under this plan, the economies that are so dependent on the stability of the timber industry will not suffer. Maintaining a regular output from the timber industry is vital to the economies of Eastern Oregon - the Multiple-Use Alternative will allow a steady output to continue.

I am enclosing a letter from Clay Todd, Sales Representative for *Western States Equipment Company*. I believe that what he has to say is very sensible and valid. I support his views -- I support the adoption of the Mulitple-Use Alternative Plan for the Umatilla National Forest.

Sincerely,

Eugene "Gene" D. Timms
State Senator
District #30

EDT/lh

RECEIVED
APR 15 1988
FOREST SERVICE
UMATILLA NATIONAL FOREST

WESTERN STATES
EQUIPMENT COMPANY

March 25, 1988

State Senator Eugene Timms
Room S302
State Capitol
Salem, OR 97310

Dear Senator Timms

Thank you for the opportunity to respond to the Umatilla National Forest Plan. I am very concerned about the management of our public lands and the effect that management has on the economic stability of Oregon.

As you well know, each agriculture and wood products job supports at least two other service jobs. Therefore, the economy of Northeastern Oregon, Pendleton, La Grande, John Day, Wallowa and Enterprise areas are nearly totally dependent on the choices you public land managers make. The Forest Service's preferred alternative for the Umatilla National Forest calls for a 15% reduction in timber harvest. Since data has proven the Umatilla could produce 213 MMBF on a sustained yield basis, the 171 MMBF proposed by the Multiple Use Alternative is not extravagant. With 171 MMBF per year, we can continue to support our schools and roads with the 25% being returned to the county. I urge you to select the alternative that provides our timber based economy with a minimum of 171 MMBF per year with at least 35 MMBF being Ponderosa Pine.

As an active sportsman, I am vitally interested in our natural environment, big game and fisheries resources. Indications are that most fisheries resources are healthy and big game numbers are increasing yearly. Many of the elk herds that are increasing in population are doing so on lands where timber sales have occurred. Consequently, it is easy to conclude that with our present management and sound timber harvest practices, we do not now adversely affect habitat number. Therefore, the Forest Service should not falsely use elk herds as an excuse to restrict timber harvest activities.

The Umatilla contains three wilderness areas. This provides 236,000 acres of land that will never be logged or otherwise affected by commercial development. The remainder of the national forest should be developed to its full potential. Our nation can no longer afford to waste our public resources. These resources should be made to work harder and produce more, just as the American working class does.

I recommend the Multiple-Use Alternative for the Umatilla. This is the most workable, and the most fair choice for the majority of the people.

Sincerely,

Clay Todd

Clay Todd
Sales Representative
La Grande Territory

D1/CST3/bw

N - 339

4330

NORTHWEST POWER PLANNING COUNCIL

851 S.W. SIXTH AVENUE • SUITE 1100
PORTLAND, OREGON 97204-1337 • (503) 222-5161

Toll free number for Idaho, Montana & Washington: 1-800-222-3355
Toll free number for Oregon: 1-800-452-2324

March 28, 1988

RECEIVED
MAR 31 1988
FOREST SERVICE
UMATILLA NATIONAL FOREST

James Lawrence
Forest Supervisor
Umatilla National Forest
2517 S.W. Hailey Avenue
Pendleton, OR 97801

Dear Mr. Lawrence:

We appreciate this opportunity to review and comment on the Umatilla National Forest Draft Environmental Impact Statement (DEIS) and the Proposed Land and Resource Management Plan (LRMP). The Council recognizes the enormity of the task undertaken in developing a plan for all forest natural resource management activities and appreciates the staff's effort to date in addressing the wide variety of issues.

The Northwest Power Planning Council is charged with developing a program to protect, mitigate and enhance fish and wildlife affected by hydropower development in the Columbia River Basin. The Columbia River Basin Fish and Wildlife Program, developed by the Council, focuses direction and sets specific actions to accomplish this charge (see attachment). Extensive public participation went into the formation of the program and has continued during its fine-tuning and implementation. It is projected that during the next three years Bonneville ratepayers will invest an estimated $50 million per year to implement the program. The estimate does not include the additional costs of lost revenue to the power system which may range from $20 - $50 million per year. This level of investment in time and dollars reflects the commitment by the Council, the fish and wildlife agencies, Indian tribes, Bonneville, federal project operators and regulators, utilities, and the public to solve basin fish and wildlife problems.

Management activities on the Umatilla National Forest, which contains a significant portion of the headwater area for the John Day, Umatilla, Walla Walla, and Grand Ronde river drainages, could potentially impact Council actions designed to improve salmon and steelhead resources. As a result, we hope that the Forest Service will take steps to insure coordination with the Fish and Wildlife Program. In addition, since the program will continue to evolve, we believe it is important that the Forest Service revisit the plan periodically and make changes to maintain coordination with newly adopted fishery objectives within forest boundaries.

N - 340

It is particularly important that the Forest Service coordinate with the Council and others during the development of the systemwide *plan for salmon and steelhead in the Columbia River System, and acknow-*ledge efforts in this regard in the Umatilla Forest Plan. The Council recently initiated this significant planning effort to attempt to identify ways to double salmon and steelhead runs in the basin. The effort, which could take up to three years, includes planning at the local level to identify fish production objectives and constraints, and at the system level to integrate these objectives. Forest representatives are working with fish agencies, tribes and others at both the local level and the system level during the process. The results of this effort will guide future program activities to increase salmon and steelhead in the basin.

We recognize that certain activities on the forest could detrimentally affect the success of actions taken to increase fish production by 1) increasing the disparity between seasonal streamflow levels, 2) increasing sediment production or otherwise reducing water quality levels, 3) degrading riparian area conditions, and 4) otherwise decreasing the quality or quantity of habitat to support existing and potential forest salmon and steelhead and wildlife production. Such potential impacts will be taken into account during system planning as planners identify strategies to reach the doubling goal. We hope that by coordinating our efforts we can ensure that the watershed conditions needed to support enhanced populations will be provided.

In reviewing the Umatilla Forest Draft Environmental Impact Statement (DEIS) and the Proposed Land and Resource Management Plan (LRMP), the Council staff was pleased with some of the protection provided existing and potential salmon and steelhead resources. Management designation C7, which permits only those activities consistent with the production of high levels of anadromous fish in the North Fork John Day River, is particularly noteworthy. However, there are other areas in the John Day drainage, such as Camas Creek, and in the Umatilla, Grand Ronde and Walla Walla systems where fish habitat protection, restoration and enhancement appear to be important. Presently it is difficult to tell whether such areas will receive adequate protection from potentially damaging timber practices and be maintained in their current condition. In addition, it appears that the Forest may be relying primarily on funds available through the Council's program and from other sources for fisheries restoration and enhancement. This may be premature, since the majority of funds to increase basin salmon and steelhead resources will not be earmarked for specific actions until completion of the systemwide plan. We hope that through system planning the Forest Service and others can work together to identify conditions needed for future salmon and steelhead resources and the most effective steps to achieve them.

In summary, our objective is to ensure that plans adopted to direct forest management actions are coordinated with regional efforts to rebuild salmon and steelhead runs. We believe that efforts to double existing runs will likely prove inadequate unless they are coordinated and integrated systemwide. We particularly hope the Forest Service will make necessary revisions upon completion of system planning to bring its plan into coordination with any future plans adopted by the Council.

Again, thank you for this opportunity to comment. We would be happy to meet with you or your staff to discuss system planning in more detail. If your staff would like to arrange a meeting or needs more information, please call Barbara Taylor at 503-222-5161.

Sincerely,

Edward Sheets

Edward Sheets
Executive Director

NEIL GOLDSCHMIDT
Governor

4322
RECEIVED
MAR 30 1988
FOREST SERVICE
UMATILLA NATIONAL FOREST

OFFICE OF THE GOVERNOR
STATE CAPITOL
SALEM OREGON 97310 1347

March 28, 1988

James Lawrence
Forest Supervisor
Umatilla National Forest
2517 S W Hailey Avenue
Pendleton, Oregon 97801

Dear Mr Lawrence

Active participation in federal forest planning is a high priority for all Oregonians It is essential that the hopes, needs and ideals of Oregonians be incorporated into these important resource plans, and that the plans be environmentally sound and provide stable, predictable supplies of commodities and amenities In that context, this letter provides the State of Oregon's comments on the Umatilla National Forest Draft Environmental Impact Statement (DEIS) and Proposed Land and Resource Management Plan (LRMP)

The state depends upon the Umatilla National Forest for resources critical to Oregon's economy and environment These lands provide a significant share of the employment in surrounding counties and of the revenues accruing to these counties In addition, the Forest contains critical watersheds and big game habitat, anadromous fish streams such as the John Day River and its tributaries, Wilderness areas and recreation sites, and is the home of many wildlife species

The State's objectives for the management of the Umatilla National Forest are twofold 1) these lands should be managed in an environmentally sound manner so that future generations have the same opportunities we do to enjoy the bounty they provide, and 2) these lands should produce the economic benefits they have traditionally provided Our comments evaluate your resource management planning from these perspectives

All affected State agencies have reviewed the DEIS and LRMP In addition, we held a public meeting in Pendleton to hear what issues relative to the proposed Plan were of special interest to the public This letter and the detailed agency attachments highlight the State of Oregon s questions, concerns and recommendations on these documents Please consider them in development of your Final Environmental Statement

THE STATE RESPONSE

We recognize the tremendous effort that went into constructing of the DEIS and LRMP and we appreciate your staff's help to us as we reviewed these documents over the last few months The State of Oregon, however, cannot support any of the alternatives in the DEIS because they appear grounded on questionable analytical assumptions, and they do not provide fully the information that we believe is needed to make a reasoned decision

With your help, we intend to construct our own State alternative for the Forest We had hoped to do this during the comment period, but our difficulties with your analysis and the existing data gaps prevented us from doing so We plan to construct a State alternative in the future after we have obtained the additional data we need and have time to analyze it thoroughly This letter is a vehicle to help you understand our difficulties with your analysis and the additional data about your Forest that we need

The rest of this letter highlights the difficulties uncovered by our State agencies, the interested public, and the Federal Plans Coordinator In outlining the problems that they uncovered, we want to emphasize that we wish to work with you in a cooperative manner to resolve the difficulties we have Both the Federal Plans Coordinator and the agency contacts identified on the attached list are willing to discuss these comments further and meet with you to explain our suggestions for clarification and improvement and to clear up any misunderstandings that we may have of your planning documents

We have organized our comments on your DEIS and LRMP into six major sections A) development of alternatives, B) estimates of resource effects, C) estimates of economic effects, D) standards and guidelines for plan implementation, E) monitoring of plan activities and effects, and F) other considerations

A. Development of Alternatives

We are concerned that the Forest's development of alternatives may have been unduly restrictive and may have overemphasized the conflicts between commodities, amenities, and environmental protection We believe that a wider range of choices that increase the compatibility of different land uses could be examined for four major outputs produced on the Forest 1) timber, 2) livestock, 3) big game, 4) anadromous fish, and 5) water In addition, we discuss the need for a "No Change" alternative and for compatibility of the Plan with plans of affected communities

1 Timber Production

Wood processing based on timber harvested from the Umatilla National Forest provides a significant share of manufacturing employment in surrounding counties and of these counties' budgets A resource management plan that maintains this flow of economic benefits from timber production is a high priority for the State's

involvement in planning for your Forest We have divided our discussion of timber production into three parts a) consideration of uneven-aged management, b) production of a stable output of ponderosa pine, and c) investigation of further management intensification for existing stands

a Uneven-aged Management

The Forest's alternatives are predicated on the widespread use of even-aged silvicultural techniques for timber production across the Forest As your DEIS points out your analysis assumes that 99 percent of the acres available for timber harvest will be assigned to even-aged management under all alternatives These techniques will result in a significant change in the vegetative composition of the Forest and its visual character over time with much of the Forest eventually becoming a mosaic of intensively managed even-aged stands interspersed with stands of old-growth and other extensively managed areas

Clearcutting will predominate as the regeneration harvest method under all alternatives with the proposed plan relying on the clearcut of over 70,000 acres (11 percent of the acres selected for timber harvest) during the next 10 years An additional 29,000 acres (5 percent of the acres selected for timber production) will be shelterwood harvested which will remove the stand in two stages over twenty years Some of this harvest will occur in the insect-infected lodgepole pine stands, but clearcuts and shelterwoods will also be the major regeneration method for your other major forest types (ponderosa pine, Douglas fir/ponderosa pine, mixed conifer, white fir, and subalpine fir)

We need to understand better the possible strategies available to you in the harvest of your diseased lodgepole pine stands, but your accelerated harvest to salvage the volume there is an understandable reaction to a difficult situation We believe that even-aged regeneration harvest techniques, such as clearcutting and shelterwood harvest, fit well with the overall management of the lodgepole pine type Also, insect and disease problems in your white fir and subalpine fir types may preclude uneven-aged management

Your proposed emphasis on even-aged management in your other major forest types especially ponderosa pine, Douglas fir/ponderosa pine, and mixed conifer, strikes us much differently Many of the healthy stands in these types currently approach uneven-aged conditions, particularly in the southern portions of the forest People throughout Central Oregon have requested that the national forests located there consider uneven-aged management for these types more seriously and comprehensively than has occurred in the issuance of DEIS's As a result two nearby national forests, the Deschutes and Ochoco have undertaken a substantial reconsideration of the potential for uneven-aged management on their forests In addition, the Winema National Forest has proposed major use of uneven-aged management on its lands

The Oregon State Department of Forestry (OSDF), Oregon Department of Fish and Wildlife (ODFW), and the Economic Development Department (EDD) all believe that the Umatilla National Forest can increase resource compatibility through uneven-aged management, especially in important visual, wildlife and riparian areas We request the Umatilla undertake a reevaluation of uneven-aged management similar to that underway on other eastern Oregon national forests so that we can better assess the benefits and costs of this approach

b Production of High Quality Ponderosa Pine

Your proposed plan would significantly reduce the amount of ponderosa pine offered for sale in the next decade in comparison to the recent past Your DEIS attributes this change to the declining proportion of ponderosa pine in the forest inventory primarily due to its emphasis in past timber harvest The planning documents, however, do not clearly present a specific direction that the Forest will take for correcting this serious problem

Much of the forest industry in eastern Oregon depends on ponderosa pine as the backbone of its operations and this proposed reduction will definitely be felt We could not tell from your DEIS and LRMP whether the proposed new level of ponderosa pine can be sustained into the future or whether it will decrease or increase in future decades Also, we could not tell whether you investigated the possibility of phasing in this reduction more gradually We will need a much better understanding of these scenarios before we can construct the State alternative

We had difficulty understanding the Forest's plans for growing more ponderosa pine in over time As an example, we do not know the degree to which it will be favored, or discriminated against, in planting and precommercial thinning nor do we know your plans to produce high quality pine in the future

Many State agency comments including the OSDF, the EDD, and the State Economist express distress over the possible loss of ponderosa pine as a predominant species on the Forest Ponderosa pine gives local primary and secondary manufacturers their competitive edge in the wood products industry In addition, maintaining ponderosa pine should reduce losses to defoliating insects and root and bole diseases and provide habitat for many wildlife species

The Umatilla National Forest should more closely examine opportunities to maintain the high quality ponderosa pine component of its timber sale program throughout the planning horizon High quality pine does not necessarily mean old growth pine Intensive forest management methods and emerging technology in such areas as pruning, and uneven-aged management, should be considered to allow sustained production of clear-boled insect resistant ponderosa pine with diameters approaching 20 inches in rotation ages close to 100 years Such production potentially could provide a continuing forest industry in forest setting that would maintain the unique character of the Umatilla National Forest

c Management Intensification in Existing Stands

The harvest schedule for the Umatilla National Forest displays the characteristics of a "deficit timber inventory" in which the nondeclining yield harvest level starts below the long run sustained yield of the forest Moving that starting harvest level toward long run sustained yield requires either increased growth on existing merchantable timber stands or earlier availability of young stands that now exist and that will be created when the existing timber is harvested

Commercial thinning in the young stands that now exist offers one way in which to achieve this earlier availability While your five-year timber sale program includes substantial amounts of intermediate harvest (commercial thinning and salvage), your proposed plan includes no intermediate harvest for the next decade and very little over the first fifty years

This result may be, in part, an artifact of the way you represented the forest structure in your analysis you collapsed stands aged 0-100 years into only three classes (ages 0, 30, and 100), even though your inventory shows acres in most 10-year age classes, and then allowed commercial thinning choices only for age classes 0 and 30 Not representing any age classes between 40 and 90 years compounded by not allowing commercial thinning to occur on stands grouped at 100 years of age results in eliminating commercial thinning opportunities that might provide crucial volume during the first 50 years

You should reexamine your condensation of the forest inventory into just a few classes to ensure that you have not biased the analysis by artificially delaying the availability of volume in existing immature stands and that you have allowed commercial thinning choices for all stands where it is biologically and economically feasible

2 Livestock Management

The economic viability of the ranches surrounding the Umatilla National Forest is, in most cases, contingent on the availability of forage from the Forest The nearby cow/calf ranching operations have for generations used these public lands as summer pasture with home ranch properties devoted to irrigated hay production during the summer months for winter feed A decline in forage availability from the Forest could have a significant effect on local ranches and the stability of local communities

Throughout the DEIS and LRMP considerable attention is given to the management and restoration of riparian areas The DEIS has effectively listed a number of management strategies to mitigate livestock-caused riparian impacts with individual allotment plans seen as the means for addressing specific resource needs Due to the intense interest in riparian management, however proposed systems of grazing management and associated practices should be more completely detailed in the Plan

One potential method of riparian restoration listed in the DEIS is elimination or reduction of livestock in those areas While specific riparian areas may require reduced grazing or exclusion of livestock for some period to promote resource recovery, the Forest should not overlook use of livestock as "resource management tools" which, properly handled, can help reach forage and riparian goals In addition, seasonal exclusion, development of alternative watering facilities, and placement of salt away from riparian areas can reduce the impact of livestock grazing on riparian zones See the Department of Agriculture's comments for more details

3 Big Game

Acre-for-acre, the Umatilla National Forest is the most effective national forest in Oregon in the production of elk With more than 500,000 hunter days occurring on the Forest each year, elk hunting is big business for the surrounding communities

We believe the Forest can go farther in examining techniques for increasing the compatibility of elk management and other major forest uses We are especially concerned about the existing and potential conflicts caused by elk wandering onto private lands Specifically, we request the Forest reexamine its roading and forage enhancement policies, in addition to considering an imaginative distribution of cover across the Forest.

Beyond including roads in your estimate of effective elk habitat, it is important that you describe in more detail your Road Management Plan, including closure policy Even though the Umatilla has embedded a lower than suggested effective road density standard in two of its alternatives (ODFW standard is 1 1/2 miles of open road per square mile), the preferred alternative has exceeded this standard Road management can help maintain effective elk habitat at minimal cost to timber production and have numerous other benefits We request you to consider the proposals included in the attached comments of OSFW and OSDF In combination with enhancing types of cover, the Umatilla should consider seeding and fertilizing in order to create more desirable forage thus holding elk on the Forest that would otherwise forage on private land

Finally the Forest should further examine and explain the factors behind the trade-offs between timber production and elk production expressed in your preferred alternative According to your DEIS, the winter range management associated with the different alternatives varies tremendously in its impact on timber harvest (from 5 1 million board feet per year to 42 4 million board feet per year) with the highest impact associated with the preferred alternative Yet we were unable to link the acres in different harvest-restricted categories to the effects--surely a 65 000 acre increase in these categories will not cause a 37 3 million board foot annual reduction in timber harvest as suggested in the Table on page IV-30

4 Anadromous Fish Habitat

The John Day River system may contain the most important anadromous fishery in eastern Oregon It supports one of the few remaining runs of wild spring chinook salmon in the Columbia River Basin and substantial summer steelhead runs Because the John Day River has a relatively small number of obstacles to fish migrating to and from the Pacific, the river system will always be a major source of Columbia River Basin salmon and steelhead The Northwest Power Planning Council has undertaken extensive efforts to rebuild the anadromous fish runs in all Columbia basin tributaries, emphasizing the preservation and restoration of natural spawning runs Our goal is to double the anadromous fish runs in the Columbia basin The John Day, Grande Ronde, Umatilla and Walla Walla River systems all contain significant habitat for anadromous fish In keeping with the Power Planning Council's goal, the Bonneville Power Administration spends many thousands of dollars annually on the Forest to construct hundreds of instream structures for fish habitat improvement All of these factors indicate that anadromous fish resources should be given special recognition in the forest plan

Maintenance and enhancement of these fisheries must be a central focus of the Umatilla Forest Plan To do this, all facets of management should be systematically examined Included in this discussion should be management choices for protection of riparian areas during logging and livestock grazing (as discussed above), alternative road building schemes, and different types and levels of instream investment We need to better understand the proposal Special Fish Management Area on the North John Day and your reasons for not applying such management along other key anadromous fish streams The impact of this management prescription on timber harvest should be identified

In all cases, this discussion should cover the predicted outputs and associated benefits and costs In this analysis, special attention should be given to the stream temperature and sedimentation effects of various activities and to actions that reduce both temperature and sediment These should be done in conjunction with the plans of adjacent forests sharing watersheds with the Umatilla National Forest so that cumulative impacts can be thoroughly evaluated

5 Water

The Umatilla National Forest encompasses parts of four drainage basins the John Day, the Umatilla River, and parts of the Grande Ronde and the Walla Walla Water uses are restricted or limited in certain parts of each basin under basin programs adopted by the Oregon Water Resources Commission These programs should be referenced in your DEIS and the alternatives should be evaluated in relation to them Water availability is extremely important to all users in the area including irrigators, domestic and industrial users, miners, and for recreation The Oregon Water Resources Department, other state and federal agencies the Umatilla Tribe and various user groups in the area are working together to address many water concerns, especially as they relate to fish and agriculture A principal focus of these efforts is to increase supply during critical periods Streamflows between May and September are critically important

The Water Resource Commission's program for the John Day basin contains specific recommendations for the Forest Service that are detailed in the Water Resource Department's comments One of the major objectives discussed there is better seasonal distribution of runoff in the John Day drainage to moderate high and low stream flows, especially through the protection and improvement of riparian areas You should give serious consideration to attaining this important objective in all basins within the Forest We believe the forest should be committed, as a part of its plan, to increasing water yields during critical periods, not just maintaining them

As noted by the Department of Agriculture, riparian areas cannot be treated as separate entities from the rest of the watershed Successful riparian enhancement efforts must involve the associated uplands as well Management must be extended to use these areas or riparian improvement will be limited The plan should more completely tie together the management of riparian areas with that of associated uplands

Finally, your discussion of the Umatilla Basin Project is extremely limited, one paragraph on page III-7 of the DEIS This is an extremely important project and the Forest Service land needed for it should be clearly identified in the plan The North Fork Meacham Creek storage site should be reserved for reservoir purposes Other potential storage sites should also be identified

6 The "No-Change" Alternative

All national forests in Oregon have been directed to provide a "No Change" alternative which will allow the public to compare management under the existing plan to that of the forest plan alternatives developed under the guidance of the National Forest Management Act The Umatilla has chosen not to include the "No Change" alternative because, as stated in the DEIS, " . the Forest can meet or exceed all key criteria that influence a need for a 'No Change' alternative "

Although the Umatilla can meet all of the resource output levels, the public has not been given the opportunity to compare the unaltered historical output levels with the DEIS alternatives As pointed out by OSDF, differences in minimum management requirements, timber inventories, and suitable forest acres between the "No Change" and the DEIS alternatives provide important comparisons that were not available in your DEIS

In addition, as pointed out by the Department of Environmental Quality, it is difficult to understand the change in environmental effects under your proposed plan without a more accurate rendering of a "No Change" alternative Alternative A (current direction) is described as the "No Action" alternative , and represents the existing situation, insofar as possible " Yet it has a significantly higher timber sale level than recently experienced--so how does it represent the "current situation" as a baseline for measuring changes in environmental and economic effects?

In summary a true "No Change" alternative should be included in the Final Environmental Impact Statement

7 Compatibility with Plans of Affected Cities and Counties

The alternatives for each national forest should be as compatible as possible with the comprehensive plans of affected cities and counties The Department of Land Conservation and Development is particularly pleased with the Umatilla's depiction of county zoning districts, listing of affected county plans and implementing regulations, and findings on the overall effect of Forest alternatives on statewide planning goals The Department has several suggestions for improving your coordination with local and State planning Most importantly, the Forest should further support the conclusion that the alternatives are compatible with the comprehensive plans of surrounding communities Where possible, local government planning authorities should be asked to provide the Forest with written assessments of the relationship of their land use policies to the alternatives Some jurisdictions may comment on the DEIS and LRMP, but given its complexity, direct discussion with local planners is the best way to assure compatibility Four major points should be discussed 1) the issues and problems discussed in these plans, 2) the relationship of policies in those plans to your proposed alternatives, 3) avoidance and/or mitigation of specific use, activity, and resource conflicts along boundaries between federal and nonfederal ownerships, and 4) coordination of land use classifications in areas of scattered tracts and intermingled ownerships

B. Resource Effects

Several types of information are not presented in the DEIS, or are based on models believed by State agencies to be founded on questionable assumptions This information is needed to understand the amenities produced, and to estimate the environmental impacts incurred by the proposed LRMP and its alternatives We have highlighted here some of the major difficulties and information needs that our State agencies found in review of your Plan More detailed discussions can be found in agency comments, especially those of ODFW, OSDF, the Water Resources Department, the Division of Parks and Recreation and the Department of Environmental Quality (DEQ) We have divided our discussion into six parts 1) stream flow, 2) fish and wildlife, 3) water and air quality, 4) Wild and Scenic Rivers, 5) timber production, and 6) summary

1. Stream Flow

The DEIS is not organized in a way that allows us to assess the impact of the proposed plan on water yields and flow timing Discussion is split between sections on soil and water, fish and riparian areas Entire watersheds are not addressed The impact analysis only addresses average annual water yields, not the seasonal variations The DEIS points out that the gap between "supply" and "demand" is greater for water than for any other Forest output Given this situation, and considerable public interest in the potential impact of

forest activities on water flow, the discussion of this relationship should be expanded In particular, elaboration is needed on the statement that your Barometer Watershed studies show "no significant changes in peak or low flow after harvest activities " Presentations on the historic pattern of flow especially peak flow and summer low flow, and information on the impact of Forest activities on these flows should be included The Forest should demonstrate a systematic search for practices which will moderate these flows in a desirable manner

The DEIS and LRMP propose to estimate tons of sediment produced as the sole indicator of the effects of timber harvest on water resources, in part, because you have concluded from you Barometer studies that your practices have little effect on water yields Other measures should be instituted to monitor for potential problems including ones that deal with water yield and timing On the Umatilla National Forest water temperature is a critical factor to be analyzed In addition, you should provide projected stream flow and timber harvest activity information by major watershed for each alternative, ideally using maps This will allow us to assess the cumulative impact of management activities by major watersheds Please see the comments of the Water Resources Department for more details

2 Fish and Wildlife

We have divided our fish and wildlife discussion into four sections a) elk habitat prediction, b) dead and down material, c) old-growth, and d) riparian zones

a Elk Habitat Prediction

We are concerned about the assumptions and analytical procedures used by the Forest to rate habitat effectiveness (HE) and generate potential elk numbers and hunting recreation visitor-day outputs Forest-wide HE estimates can produce misleading numbers and mask declining habitat on parts of the Forest In addition, ODFW points out the Forest has dropped size and spacing of forage and cover from the HE analysis in spite of widespread acknowledgment of their importance

We request an estimate of habitat effectiveness for geographic subdivisions of the Forest, such as watersheds or big game management units and that the size and spacing of cover be considered in these estimates

b Dead and Down Material

Dead and down woody material is increasingly recognized as an important component of the forest ecosystem The Summary (page 50) states the proposed plan will provide snag habitat at 50percent of population potential for cavity nesters Yet the DEIS (IV-6) shows a majority of your timber suitable acres will be managed at the 80 or 100 percent levels, with the remaining timber suitable acres managed at the 40 percent level In addition, we assume the 300,000 forested acres on which timber harvest cannot occur will be managed at a high level of cavity nester habitat Therefore, we do not understand how an average of 50 percent is obtained--the average seems considerably higher

N - 346

ODFW believes past logging has left insufficient snags to maintain cavity nesting species and is unaware of any monitoring of snag retention on the Umatilla Are these observations correct? Have they been incorporated into the estimate of cavity nester provision under each alternative?

As pointed out by OSDF, it appears the Forest planning model had choices of 40 or 80 percent of habitat potential for cavity nesters on lands allocated to timber production, but did not provide for a choice of 60 percent Because this latter percentage represents ODFW's goal for cavity habitat on these lands, it is especially important that this choice be represented in your model and that the implications of requiring at least 60 percent on all timber suitable lands be described

c Old-Growth

Old-growth is an important component of forest habitat for many species, yet the DEIS and LRMP lack a detailed discussion of old-growth groves that will be maintained under each alternative and tables showing the amount of existing and future old-growth In addition, we do not understand your concept of "managed" old-growth, nor the decision process between "managed" and "dedicated" old-growth in each alternative The above information would be of major help to the State in developing its alternative

d Riparian Zones

Riparian area management is a critical concern in semi-arid eastern Oregon, where these areas are so important to water flow management, fisheries, and species diversity Unless done carefully, land management activities in riparian areas can compact soils, thus affecting water flow rates, and raise water temperatures A full understanding of the affected resources is essential to ensure that riparian zones are not degraded through land management activities Their importance is underscored by the many State agencies which expressed concerns over possible degradation of these areas including the Department of Agriculture, DEQ, and ODFW

We found little quantitative information in the DEIS and LRMP on riparian zones and evaluation of their condition We request that you provide us 1) a map of riparian zones by condition class, or at least a compilation of this information by subbasin, 2) more information on the allowable livestock use rate in these zones, and 3) a description of the technique used to rate streamside zone condition

3 Air and Water Quality

Regarding air quality, the DEQ's main concerns relate to impacts from prescribed burning on the Forest and from burning of the Forest s fuel wood by the public within urban areas Management alternatives should be developed that minimize smoke from prescribed burning while utilizing woody residue

Regarding water quality, DEQ's main concern is that the LRMP be consistent with Oregon s adopted Statewide Water Quality Management Plan for forest practices as required by the Clean Water Act The DEIS and LRMP recognize goals of meeting water quality standards and protecting beneficial uses of water However, these documents lack information needed to assess adequately the water quality effects of proposed activities on the Forest, including sediment production and management controls in specific watersheds Findings need to be made on the relationship between baseline water quality conditions and the effects of proposed Forest activities

See DEQ's comments for more detail on these problems and suggestions on solving them, particularly the suggestion that Oregon's water quality standards and forest practice rules be added to the goal statement and the standards and guidelines

4 Wild and Scenic Rivers

Your Forest Plan proposes parts of two rivers for Wild and Scenic protection 1) the Grande Ronde, and 2) the North Fork of the John Day While only Congress can make these designations, the net effect of your recommendations, if implemented, would have the Forest Service manage the associated river corridors to protect the qualities that make the rivers eligible for such designation Other rivers examined by the Forest Service on this Forest, but not recommended, include other segments of the John Day, the Wenaha, and the Tucannon

In all these examinations, you should scrupulously follow the Wild and Scenic River Act Particularly, you should ensure that all eligible rivers are examined in this assessment and fairly considered for the different categories of designation

The Grande Ronde was studied by the Oregon State Parks and Recreation Division and found to be eligible as a State Scenic Waterway, but the Oregon Transportation Commission did not designate it

At this time, the State has not reached a decision on what type of management to recommend for any of these rivers, but you should manage all of them to protect their eligibility for wild and scenic designation until Congress acts

5 Timber

The starting timber inventory and the yield projections for existing and future stands form the basis of any estimate of the sustainable timber harvest level Yet we had significant difficulty understanding how your modeling assumptions affected these key components Specifically, we would like to know 1) how the acres and volume by age class represented in your forest planning analysis for potentially suitable timberland relates to the results from your last timber inventory, 2) how the growth projected on your existing stands in that analysis relates to the growth found in your last timber inventory and 3) the rationale for any differences uncovered between assumed and actual inventory and growth

Your analysis apparently does not recognize timber volume in young stands until they reach commercial thinning age Such an approach understates the inventory on the Forest at any time and could unduly alarm people about how much your inventory may be drawn down over time You should correct this deficiency before issuance of the Final Environmental Impact Statement

6 Summary

Many State agencies were unable to make effective comments on the DEIS and LRMP because these documents lacked needed geographic detail Presenting resource effects on a forest-wide basis may be valuable for some outputs, such as the overall timber harvest but has little value for other outputs, such as sediment production, water flow and habitat structure over time Instead, the State agencies need information on proposed activities and their effects by watershed or some similar forest subdivision

In discussions with your forest planners they point out that the forest already has a geographic breakdown for monitoring and analysis We can't determine from the DEIS or LRMP whether this is adequate for estimating environmental effects We request that you provide a map showing this geographic breakdown so we can assess its adequacy

C Economic Effects

We have a number of difficulties with the information provided on economic effects and the analyses used in their estimate We have highlighted here seven major areas of concern 1) characterization of proposed harvest and employment levels, 2) portrayal of ponderosa pine value as a function of diameter and over time, 3) portrayal of recreational activity value, 4) estimation of supply and demand for timber, 5) estimation of supply and demand for recreational activities, 6) handling of budget uncertainty, and 7) characterization of mineral exploration

1 Timber Harvest and Employment Impacts of the Proposed Plan

The lumber and wood products industry provides a substantial portion of manufacturing employment in the counties that surround the Forest County road and school budgets depend on their share of federal timber receipts A resource plan that maintains these economic benefits from timber production is a high priority for State involvement in planning for your Forest.

Your DEIS compares the timber harvest effects of the alternatives to the average for sales and harvest of 1976-85 We feel that in addition, the sales and harvest for the last few years should serve as a benchmark

Comparing proposed future harvest to a past harvest reflecting occurrences for the past 10 years has validity on a long-term basis since these years include a number of industrial cycles The 1976-85 averages for timber harvest and timber sales, however, do not necessarily represent the experience of western national forests in the last few years In fact, many national forests in Oregon have recently experienced a timber harvest much higher than the 10-year average as companies cut their accumulated timber-under-contract with the return of high stumpage prices

Your conclusion that timber harvest under the preferred alternative will rise in comparison to the 10-year average may cause people to believe that the timber supply will expand under the proposed Forest Plan Comparing the proposed harvest to that of the past few years would allow a more realistic assessment

According to the DEIS, employment under the proposed plan would rise by 655 jobs--644 in wood products, eight in "red meat", and three in recreation-- personal income would increase by $15 6 million, and county payments would also increase substantially As pointed out by the State Economist, it is unlikely that the region's economy will achieve these substantial economic gains under the Plan for three major reasons 1) The amount of ponderosa pine offered for sale, the most valuable andsought-after species, will decline by over 40 percent from the sales of recent years In its place will be more of species, such as white-fir that have traditionally been difficult to sell, 2) Economic gains, such as employment and personal income, are estimated relative to the period 1980-1984 which was a time of deep recession for the State at large and the wood products industry in particular As an example, comparing the proposed plan's allowable sale quantity of 154 million board feet to the average harvest for 1976-1986 of 149 million board feet yields an increase of 61 jobs--one-tenth of what the DEIS estimates, and 3) Projected jobs per million board feet harvested are based on historical relationships that have changed significantly as mills have modernized in the last few years

In summary, the Forest should compare the proposed maximum timber harvest to the harvest of the last few years in addition to the 10-year average, and the Forest should estimate employment, personal income, and county revenue change relative to these same two time periods rather than to the worst five years in recent wood products history

2 Recognizing the Increasing Scarcity of Ponderosa Pine

Ponderosa pine is the green gold of the national forests in eastern Oregon As pointed out by our State Economist and EDD, it has increased in value, and probably will continue to increase in value, more rapidly than other species Yet your analysis lumps all species together in applying a one percent real price increase over time Such an approach masks the virtue of continuing to grow high quality ponderosa pine We request that your analysis be improved to project the value of ponderosa pine separately from other species

N - 348

The DEIS provides information on your assumed prices by diameter class for each species According to that data, you assume that 8-10 inch ponderosa pine is worth 70 percent of the value given ponderosa pine over 25 inches We believe such an assumption further underestimates the value of growing large pine We ask that you justify the assumption or change it

3 Improving Valuation of Recreational Activities

Your analysis apparently reduced the value of recreational activities by 37 percent. In addition, you assigned a zero percent real price trend to these activities while applying a one percent real price trend for timber These assumptions can result in a serious undervaluation of the contribution recreation makes to the wealth derived from the Forest You should support the assumptions or change them

4 Estimating Supply and Demand for Timber

Your DEIS states " all Forest alternatives provide ASQ's that fall within the range of, or exceed, anticipated demand through the next five decades " National forests are major timber suppliers in eastern Oregon, and, in some cases, are the primary supplier Given the reduced timber sale levels proposed by adjacent forests, it is doubtful that timber sales from the Umatilla National Forest will meet anticipated demand, especially for high quality ponderosa pine As further evidence, OSDF points out that 1986 timber harvest in the counties used in your demand analysis exceeded your "maximum probable demand" by 29 percent

We ask that you reconsider your estimate for the supply and demand for timber in your area to include more realistic estimates of supply and demand from all owners Further we request that you highlight the projected supply and demand for high quality ponderosa pine

5 Estimating Supply and Demand for Recreational Activities

We have divided our discussion on supply and demand for recreational activities into two sections a) Developed recreation, and b) Dispersed recreation

a Developed recreation

The DEIS and LRMP state that overall, no need exists to develop additional campgrounds to meet future demand because any increased demand can be met by enlarging the capacity of existing sites This position is based on the SCORP statewide projected need for campsites More than anything, this approach points out the danger of relying on statewide SCORP estimates While SCORP projects a 36 percent statewide increase in campground demand, it projects a 165 percent increase for the seven-county area surrounding the Umatilla National Forest.

Your plan also calls for development of 30 miles of trails during the life of the plan Again, for the seven-county area, SCORP projects the demand for almost 10 times as many new miles of trail

In summary, we believe that substantial need exists for more campgrounds and trails on the Umatilla in the near future and request that you reevaluate your proposals here

b Dispersed recreation

We support management of the national forests to provide a broad range of recreational opportunities Under the proposed plan, supply of semi-primitive motorized and non-motorized recreation falls short of projected demand during the life of the plan

Further, the proposed Plan assumes that, as the demand for these opportunities increases and the amount of unroaded settings decreases, recreationists will accept higher densities of use The Forest should reevaluate and further justify its proposals on the development of roadless areas from the standpoint of providing semi-primitive experiences Parks and Recreation is especially concerned that roadless areas retained for semi-primitive recreation will be overly concentrated in the grass-tree mosaic

6 Budget Uncertainty

Throughout the DEIS and LRMP, you refer to proposed actions that may or may not occur depending on budget constraints While the general discussion of budget constraints is useful, we ask that you address more specifically the likelihood of funding availability for the proposed actions and the impact on Forest resources if expected funding does not materialize

7 Mineral Exploration

With only a few exceptions, the Department of Geology and Mineral Industries (DOGAMI) believes that the mineral data base presented in your DEIS is complete and adequate The description of metallic mineral, oil, gas, and coal resources is particularly well-written and gives good coverage for areas where documentation exists.

DOGAMI points out, however, that the DEIS, in tone and content, slights mineral exploration and development. Mineral production appears to be viewed as an activity to be tolerated rather than an activity with a positive value that should be encouraged The often-repeated theme that mineral exploration and development will not be permitted if there is a detrimental impact on other resources illustrates this negative theme Nowhere is it acknowledged that there may be areas on the Forest where mining may be the highest and best use of the land and that such areas should be protected from competing uses

Under Desired Future Conditions in the LRMP (4-7), you state that the number of mining claims will decline from 1100 to 400 We wonder why and for whom that is a desired future condition Enhanced mineral productivity in an environmentally acceptable fashion is a good way to provide jobs for Oregonians in rural areas Federal mineral leasing is especially important since one-half of the resulting revenues are returned to county governments Given the increase in mineral exploration in eastern Oregon in recent years, we expect an increasing amount of activity on your Forest in the future

In addition, the DEIS and LRMP contain little discussion under each alternative on the numerical values of the mining resource and on mineral access and mineral policy direction

To correct these deficiencies, you should, in general, treat minerals as a positive factor rather than as a potential problem in terms of other resource values Toward that end, we request that you make seven changes 1) add a management goal under Management Directions and Goals (4-2, 4-7) to the effect that the "Forest encourages and supports geologic mapping and investigations of mineral resources", 2) set priorities on areas to be evaluated in the future for mineral potential, 3) discuss mineral and energy resources in the explanations of each alternative, 4) present the economic and environmental analysis that resulted in placing restrictions on mining on any lands, 5) consider current environmental controls and reclamation methods in this analysis, 6) document, to the extent possible, the dollar values of the potential mineral resource under each alternative, and 7) portray minerals, in general, as one of the forest outputs that you wish the Umatilla National Forest to provide

D Standards and Guidelines

We believe that the standards and guidelines for implementing a Forest Plan should state the bounds or constraints within which all practices will be carried out in achieving the objectives of the Plan Therefore, standards and guidelines must be measurable to be meaningful There is little purpose in defining standards and guidelines for which no methods exist to measure the degree of compliance or attainment

As a whole, the standards and guidelines for Plan implementation seem weak in some places This appears especially true in the statements on wildlife and fish, water, soil, and riparian areas The qualifiers that occur throughout this section, such as "some," "sufficient," "where needed," "as necessary," and "significant" seem subjective

The Forest should develop clearer and more objective standards which will provide guidance for plan implementation We recommend that your Forest use terminology developed by the Siskiyou National Forest for the types of guidance or restrictions you adopt Please see the comments of ODFW, and the Water Resources Department for suggestions on what is needed

E. Monitoring

We believe the purpose of a monitoring plan should be to establish methods and threshhold levels for evaluating the direction, standards and outputs of the Forest Plan We recommend that the Umatilla consider in its Final EIS the monitoring format proposed in the recently released Region 6 monitoring guidelines paper and more specifically the Siuslaw National Forest's monitoring plan for improving your own program In addition, see the comments of ODFW, OSDF, DEQ and the Water Resources Department

Because so much is unknown about the effects of management activities on different forest resources, we must rely on monitoring to provide early warning signals about activities having effects beyond acceptable limits Therefore, we recommend that the budget for this monitoring be considered an integral part of the provision of outputs from the Forest and that your Plan be structured so output levels will be proportionately reduced if monitoring resources are not forthcoming as promised

F. Other Considerations

The Umatilla National Forest is the eighth of the thirteen national forests in Oregon to publish a management plan The State may modify its position and recommendations on individual plans when the aggregate effect of these plans has been determined on resource outputs such as timber, salmon and steelhead, big game, water quality and recreation opportunity Therefore, we urge the Forest Service not to adopt any final plan until the cumulative effects of all draft, revised draft, and supplemental national forest plans are known by the public

Further, we urge you to continue managing the Umatilla National Forest under the existing management plan until a new plan is in place or until amendments to the existing plan are developed and approved with participation by the State of Oregon In the interim, constraints should not be applied to existing plans in contemplation of the new plan without full public participation

Attached to this letter are reviews of the Umatilla National Forest DEIS and LRMP completed by affected State agencies These reviews consider economic, social, environmental, and legal aspects of the planning documents They contain substantive technical comments, on the quality of analysis and the information needed to make an informed assessment, that should be considered an integral part of the State response In addition, the reviews contain suggestions on how your proposed plan can be changed to better meet State agency goals After we construct the State alternative for your Forest, you will be able to assess the State position on each of these agency suggestions regarding resource outputs on your Forest

Thank you for the opportunity to respond to the Umatilla National Forest DEIS and LRMP The State of Oregon stands ready to help you as you move forward in completion of your Forest Plan For assistance on our comments about the overall planning process and procedures, feel free to contact Norm Johnson, Federal Forest Plans Coordinator

James Lawrence
Umatilla Forest Supervisor
March 28, 1988
Page 19

For assistance on particular resource issues, please contact the appropriate individual indicated on the enclosed list of agency contacts

Sincerely,

Neil Goldschmidt
Governor

NG cs

Attachments

1350N

STATE AGENCY REPRESENTATIVES FOR
NATIONAL FOREST COORDINATED RESPONSES

CONTACT PERSON	DEPARTMENT/ADDRESS	PHONE
Dan Carleson	Department of Fish and Wildlife P O Box 59, Portland, OR 97201	229-5677
Rick Roberts	Department of Fish and Wildlife P O Box 59, Portland, OR 97201	229-5677
Don Eixenberger	Parks and Recreation Division 525 Trade St SE, Salem, OR 97310	378-6597
Rick Bastasch	Water Resources Department 3850 Portland Road, Salem, OR 97310	378-3671
Pam Wiley	Division of State Lands 1600 State St . Salem, OR 97310	378-3805
Alex Sifford	Department of Energy 625 Marion St , Salem, OR 97310	378-2856
John Beaulieu	Dept of Geology & Mineral Industries 910 State Office Bldg., Portland, OR 97201	229-5580
John Jackson (Water Quality)	Department of Environmental Quality 811 SW Sixth, Portland, OR 97204	229-6035
John Core (Air Quality)	Department of Environmental Quality 811 SW Sixth, Portland, OR 97204	229-5380
Jim Knight	Department of Land Conservation & Development 1775 Court St., NE, Salem, OR 97310	373-0085
Reis Hoyt	Economic Development Department 595 Cottage St NE, Salem, OR 97310	373-1200
Ann Hanus	State Economist, Executive Department 155 Cottage St NE, Salem, OR 97310	378-3405
Jeff Hannum	Employment Division 875 Union St NE, Salem, OR 97311	378-2736
Phil Ward	Department of Agriculture 635 Capitol St NE, Salem, OR 97310	378-3810
Robert Schumacher	Intergovernmental Relations Division 155 Cottage St NE, Salem, OR 97310	378-5937
Bob Brown/ Ray Miller	Department of Forestry 2600 State St, Salem, OR 97310	378-2664
Norman Johnson	FEDERAL PLANS COORDINATOR Department of Forestry 2600 State St, Salem, OR 97310	378-8715

RGB jp
2/88

significant economic benefits for both the state and local economy. We are concerned that the alternatives presented in the draft environmental impact statement, with the exceptions of E and G, do not place an emphasis on maintaining or enhancing current herd levels. Alternatives E and G do in fact maintain the population of elk, but at the expense of timber harvest. The state forest plan review team believes that a management alternative for the Umatilla can be devised in a way to maintain elk populations along with an acceptable level of timber supply. Attachment B describes in further detail the state's rationale for a detailed look at such an alternative and provides suggested standards and guidelines to be used by the Forest Service in developing it. If the Forest Service choses not to model this alternative, we would nevertheless like the Forest Service to address the suggested standards and guidelines found in Attachment B.

In closing, I have asked the appropriate agencies to conduct an aggregate impact analysis of all seven Washington Forest Service plans. We will not select or propose a preferred alternative plan for any national forest until this evaluation is done. Consequently, I urge that the Forest Service not adopt individual forest plans until the state has had the opportunity to comment on the statewide aggregate impact. This will allow additional time for the state to work with you to develop and refine an acceptable final statewide position on all forest plans in Washington State.

If you have questions or wish to follow up on any of the suggestions contained in this letter, please contact Bob Nichols of my office at (206) 586-0820.

Sincerely,

Booth Gardner
Governor

Attachments

cc: The Honorable Brock Adams
The Honorable Dan Evans
The Honorable Tom Foley
The Honorable Neil Goldschmidt
The Honorable Dean Sutherland
The Honorable Jack Metcalf
The Honorable Darwin Nealey
The Honorable Eugene Prince
The Honorable Pat Patterson
The Honorable William Grant
The Honorable Peter Brooks
The Honorable Jeannette Hayner

6023J

ATTACHMENT A

POLICY COMMENTS

STATE AGENCY REVIEWS OF THE UMATILLA NATIONAL FOREST PLAN

PARKS AND RECREATION DIVISION

DEPARTMENT OF ENERGY

DEPARTMENT OF FISH AND WILDLIFE

DEPARTMENT OF FORESTRY

DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT

ECONOMIC DEVELOPMENT DEPARTMENT

DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

DIVISION OF STATE LANDS

DEPARTMENT OF AGRICULTURE

WATER RESOURCES DEPARTMENT

DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ECONOMIST

EMPLOYMENT DIVISION

STATE OF WASHINGTON
OFFICE OF THE GOVERNOR
OLYMPIA
98504-0413

BOOTH GARDNER
GOVERNOR

4329
RECEIVE
MAR 31 1988
FOREST SERVICE
UMATILLA NATIONAL FOR

March 25, 1988

Mr. James A. Lawrence
Forest Supervisor
Umatilla National Forest
2517 Southwest Hailey Avenue
Pendleton, Oregon 97801

Dear Mr. Lawrence:

I appreciate having this opportunity to comment on behalf of the state of Washington on the proposed management plan for the Umatilla National Forest. The state of Washington wants a forest management plan which is both environmentally sound and provides an acceptable and stable supply of amenities and commodities. This is a difficult task and I trust you will find the state's comments constructive. As you move towards a final plan and EIS we would like to work with you to develop a management plan which balances state and federal objectives.

The Forest Service is developing management plans for the seven national forests in Washington State. These will have significant socio-economic and natural resource impacts on the state and those local communities and industries which rely upon forest resources. In view of this, I have asked the appropriate state agencies to review each forest plan to determine whether it is consistent with state policies. I have also asked them to suggest positive steps which could be taken by the Forest Service to accommodate state concerns. This review has included coordination with the Commissioner of Public Lands as the attached letter documents.

The state's response is divided into three main components. Attachment A lists the key state policies, analyzes the preferred alternative with regard to them and indicates certain positive steps that the state believes should be taken. Attachment B defines the parameters we would like to see modelled in a new alternative and Attachment C is a compilation of page-specific technical comments from state agencies.

The state of Washington would like the Umatilla National Forest to model an alternative which features both elk and timber supply. The Rocky Mountain Elk in the Washington portion of the Umatilla is, we believe, a significant statewide resource, enjoyed by hunters and non-hunters alike, and provides

POLICY 1 -- THE UMATILLA NATIONAL FOREST SHOULD PROVIDE A RELIABLE FLOW OF RAW MATERIAL TO HELP SUPPORT THE VIABILITY OF THE STATEWIDE FOREST PRODUCTS INDUSTRY.

The Umatilla National Forest is a significant contributor of timber to the local four county area with an average of 56 percent of total supply from all owners over the 1975-84 period. On a statewide basis the forest provides less than one percent of statewide harvest. The state of Washington expects the Umatilla to continue as a major supplier of wood for the areas's vital forest products industry. Timber sales should provide a level of stumpage, species mix, and availability to meet industry needs without dramatic variations which distort stumpage prices and make long range industry planning difficult. Forest Service actions should support the state's policy to provide employment, business activity and revenue growth.

The composition of mill ownership in the state has changed significantly since 1980. The five primary processing sectors of the forest industry (sawmills; veneer and plywood; pulp; shake and shingle; and post, pole and piling) have suffered a substantial decline from 1980 through 1984. During this period the number of mills has declined from 553 to 340, a 39 percent decline. Although one might surmise less timber demand based on these statistics, the logic is too simplistic. Sawmilling capacity has actually increased to a statewide record level of 12 45 million board feet, lumber tally. The number of sawmills declined from 208 in 1980 to 150 in 1984, a 28 percent decline. The number of class A mills, however, increased from 39 in 1980 to 45 in 1984. Clearly, the USDA Forest Service must consider distributional effects of policy changes upon the forest products industry. Obviously, the nonintegrated, smaller operations are more susceptible to variations in timber supply from public lands. A recent decision by the Forest Service to suspend one-third of its 2988 timber sales for the Pacific Northwest underscores the potential impact timber availability has on the smaller "log poor" producers.

Forest Service actions concerning timber harvests will not only affect those businesses directly concerned with the harvesting and processing of timber, but have a "ripple" effect on business activity in related sectors including transportation services and other businesses in the services and trade sectors. In other words, small changes in timber availability will have multiplier effects throughout these sectors affecting both the local and statewide economy. Consequently, providing a fairly stable flow of timber from national forest lands which avoids dramatic fluctuations is a preferred approach for the Umatilla.

The timber and wood products industry requires a dependable supply of timber each year. Difficulties result when annual timber harvests fluctuate sharply from year to year. These peaks and valleys should be reduced as much as possible to provide an even flow of timber to the industry. Employment and revenues would stabilize and employers, employees, citizens, and government officials would be able to plan their activities in a more effective manner. The state recognizes that providing an even flow in the total wood supply from all owners in the Umatilla area is not within the USFS responsibility or capability, however, there needs to be a cooperative relationship among all timber landowners in the area regarding harvest levels since 44 percent of the present timber supply comes from non-National Forest Service lands.

The preferred alternative, Alternative F, has an annual allowable sale quantity of 154 million board feet This compares with a harvest of 154 million board feet per year for the period 1976-1985 We did not find any specific information, however, that shows the historical harvest level would likely be maintained from the Washington portion of the national forest during the next 10-15 year management cycle. The issue -- "Will the timber harvest from the Forest in Washington State be maintained at the historic 10-year level" -- remains unanswered.

POLICY 2 -- PROMOTE LONG-TERM COMMUNITY STABILITY

It is the policy of the state of Washington to encourage the balanced growth of the economy consistent with the preservation of Washington's quality of life and environment. Inherent to this policy is the provision of adequate job opportunities and revenues by stabilizing and broadening the state's economic base, while maintaining high natural resource and environmental values. In addition, it is the state's policy to provide communities with access to opportunities for productive and coordinated development to promote community economic vitality

The Washington State Legislature established the Community Revitalization team (CRT) in 1985 to promote the revitalization of economically distressed communities through the effective use of federal, state, and local resources. Columbia County has been designated as distressed area since 1985, unemployment rates have remained persistently high, and real personal income per capita has not matched statewide growth.

Any reductions in the total timber harvest will continue to destabilize many of the small local communities located adjacent to Umatilla Forest. Umatilla's plan should complement state efforts to diversify these areas and not create or exacerbate undesirable conditions. With this background in mind, specific conditions regarding the Umatilla's National Forest (Draft Environmental Impact Statement (DEIS) are discussed below.

A. The Umatilla National Forest model does not adequately consider the impacts of each alternative on the individual counties or specific communities located in the area.

Community and business leaders need adequate information to evaluate the DEIS and to undertake proper economic development activities that would complement Forest Service plans.

The Umatilla National Forest plan does not provide adequate community impact information. The model is based on gross national values used to evaluate the alternatives and provides socio-economic impacts that are not adequate for local impact assessment. In addition, the information given needs to differentiate between Oregon and Washington. Employment and revenue information is provided for the entire ten-county interstate region and not for the specific communities that would experience most of the impacts.

B. The Umatilla National Forest model does not adequately emphasize economic diversification opportunities.

It is recognized that all but two of the alternatives presented in the DEIS do not appear to result in job losses for the local timber industry or in revenue losses for county governments (Table S-2, DEIS). The state has chosen to treat these job gains and losses as an index rather than an actual job figure. We believe, however, the present job estimates create a false impression about the impact of these alternatives. The alternatives clearly will not create the number of jobs forecast and may even create a decline although it is impossible to tell from the data presented. A much tighter relationship needs to be established between the declining ponderosa pine inventory -- the most valuable timber species -- and related job losses or gains. Even though total volume may not change, species composition will influence the number of jobs. This is especially important to the evaluation of the new alternative.

The state believes there are numerous opportunities to utilize the Umatilla for other economic benefits such as recreation, hunting, and tourism. The model used by the Forest Service emphasizes the cost and sales of timber production, its major revenue producer. However, through joint discussions with Oregon's recreation professionals, we have significant concerns about the way the Forest Service calculates the contribution of recreation to Present Net Value and, therefore, its potential contribution to local economic diversification opportunities. Protection and enhancement of the elk herd, discussed in the Governor's letter would be a major example of income to local economies which meets the state's objective of diversification.

C. If the Forest Service chooses an alternative that creates negative socio-economic impacts, the Forest Service should thoroughly discuss possible mitigation measures in order to avoid conflicts with federal and state job and community assistance programs.

D. Coordinate the Umatilla Forest Plan with local planning efforts.

Walla Walla County is deeply concerned about the influence of logging and road building in the Walla Walla River watershed. This watershed is integral to the maintenance of the local water supply and economy. Please pay special attention to this issue as you address any proposed development in that watershed.

POLICY 3 -- NATIONAL FOREST PLANS SHOULD PROVIDE NEEDED RECREATIONAL OPPORTUNITIES FOR WASHINGTON CITIZENS AND VISITORS. IN ADDITION, RECREATIONAL AND TOURISM OPPORTUNITIES LEND THEMSELVES TO ECONOMIC DIVERSIFICATION AND COMMUNITY STABILITY.

Although only 20 percent of the Umatilla National Forest is in the state of Washington, the Umatilla is a major provider of recreation opportunities for the residents and visitors of Asotin, Columbia, Garfield, and Walla Walla Counties (SCORP Planning District 13). References throughout the proposed Management Plan assessing recreational demand and need are to the Oregon SCORP and the Pacific Northwest River Basin Commission Study. We would like the Forest Service to consider some specific needs identified in the 1985 Washington SCORP and the 1987 Washington Off-Road Vehicle Plan in establishing directions for recreational opportunities:

A Camping

The demand for camping facilities is District 13 is currently 62 percent satisfied An additional 407 sites are projected to be needed by 1990 in the four-county area The Management Plan proposes that developed recreation opportunities will be enhanced and increased at water-related sites only Please consider increasing the number of campsites at the existing Washington campgrounds (Tucannon, Big Springs, Teal Springs, etc) to reflect the demand for these facilities. The NOVA Program, managed by the IAC - Outdoor Recreation is a potential source of funds for camping facilities.

B Fishing

There is a critical need to ensure the survival of current fish resources in addition to meeting the growing facility needs for fishing from a bank Citing the proposed Management Plan, " .total demand for sport fishing in the Pacific Northwest Region for both resident and anadromous fish is expected to increase by about one-third between 1980 and 2000 By 2030, demand for sport fishing is expected to increase by at least 90 percent " We encourage maintaining the highest level of fish populations

C. Hunting

The proposed Management Plan indicates that 90 percent of the total recreation use on the Forest is dispersed, and that hunting, the most popular dispersed use, comprises over 40 percent of the total recreation use. Citing the Washington SCORP, "although the number of licensed hunters is growing at a slightly lower rate than the state's population, just the absolute increase in hunting implied by these population increases will put significant pressures on existing wildlife resources." Eleven percent of Washington State residents now hunt, but 34 percent of the residents in southeastern Washington participate in hunting. The Plan states that the large number of hunters are at or close to the capacity of the Forest, and that some hunters have moved to less popular areas or quit big game hunting We encourage the forest to increase big game populations to keep a high success ratio, and to increase current capacity levels to accommodate the existing large numbers and the projected demand of hunters, so that they are not forced to go "elsewhere."

D Trails, Nonmotorized

The Washington SCORP identifies a need for 70 additional miles of backpacking trails by 1990 since district 13 is experiencing use pressures." An additional 14 miles of bridle trails is needed by 1990 in District 13. Ninety-five percent of bridle trail opportunities statewide are provided by federal agencies. An additional 95 miles of hiking trails are needed by 1990, with only 55 percent of the demand for hiking opportunities currently being satisfied in District 13.

We support alternatives that maintain a high quality trail system and provide additional opportunities to meet these projected needs. We would encourage the Forest Service in their Trail Inventory and Management Plan that will be prepared within the next few years to not be limited to

mileage indicated in the preferred alternative, but reflect on the demand for trail miles. The Interagency Committee for Outdoor Recreation's NOVA Program may be a potential source of funds for trail construction/reconstruction.

E. Trails, Motorized

The following demand figures are from the 1987 Washington State Off-Road Vehicle Plan and do not include snowmobiles. Planning District 13 has a current need for 190 miles of trail motorcycle trails. 98 miles of 4x4 trails, and 22 miles of ATV trails. The majority of the users in District 13 head to the Umatilla National Forest or private lands within the Blue Mountains. The 1987 ORV Feasibility Study for the Walla Walla area indicates that the majority of the users from this urban area head to the Oregon side of the Umatilla for this is where the majority of the trails are located. The 1987 ORV Plan recommends that the National Forests plan and develop ORV projects in the following order: develop new 4x4 projects, maintain existing motorcycle trails, and develop new motorcycle trails.

The 1987 ORV trail inventory indicated a loss of 690 miles (28 percent) from the 1981 inventory. This loss was due primarily to the establishment of wilderness areas. In the Umatilla alone, 122 miles were removed from ORV use in 1984 with the establishment of the wilderness areas. If the number of trail miles available is further reduced, it will concentrate a growing number of ORVs on a smaller resource base, thus intensifying impacts and reducing the quality of the trail experience for all trail users. It is important to maintain and redevelop existing trails for ORV use. This can lead to potential conflicts between users groups. In fact, the draft EIS states that "past reduction of areas available for ORV use has fueled the increased potential conflict with other recreationists."

The Preferred Alternative F maintains or increases semi-primitive ORV opportunities, and expects to meet the demand. Although the proposed Management Plan does not identify the location of the proposed construction/redevelopment of 30 miles per year, we would encourage the Forest Service to examine the demand projections in the 1987 Washington State ORV Plan and provide opportunities for ORV use within Washington State.

The NOVA Program, managed by the IAC-Outdoor Recreation is a potential source of funds for motorized trails.

F Recreation Opportunity Spectrum

We are concerned that the demand for semi-primitive experiences is expected to exceed capacity. In comparing acres needed to satisfy Recreation Visitor Day (RVD) demand to the acres of recreation opportunities available in the Preferred Alternative F, we find that the demand for primitive experiences will be at a 32 percent satisfaction rate, and the demand for semi-primitive motorized will be at a 54 percent satisfaction rate. We see an imbalance between types of recreation demands and preferred alternative's provisions to meet such demands; this imbalance needs to be addressed in light of the projected demand of the Washington SCORP.

G. Scenic Rivers

Washington State is currently studying all rivers in the state which possess outstanding natural, scenic, historic, ecological, and recreations values. Those rivers of the very highest quality will be recommended to the Washington Legislature for inclusion within the State Scenic River System. The Tucannon and Touchet Rivers within or partially within the Umatilla National Forest are currently under review and consideration, but have not yet been selected for detailed study. The draft EIS, page III-68, indicates that Tucannon River was inventoried for Wild and Scenic classification, but in the preferred plan the Tucannon River is not proposed for formal designation. Both the Tucannon and Touchet Rivers should be considered and they should be afforded special consideration by the USFS so as not to preclude them from inclusion as state Scenic Rivers. This should include restriction of timber harvest and road construction within one-quarter mile of the river.

H. Winter Recreation

The Forest Plan and draft EIS appears to adequately address winter recreation needs.

POLICY 4 -- WILDLIFE/FISHERY MANAGEMENT AND HABITAT PROTECTION SHOULD EMPHASIZE STATE SPECIES GOALS.

The USFS published policy on fish habitat (Forest Service Manual 2603, 4/78 R-6 Supp. 16) indicates the following priorities regarding fisheries management: where feasible, protect the existing habitat from degradation; rehabilitate areas in which existing habitat has been degraded as a result of management activities, rehabilitate, where feasible, areas in which natural forces have caused habitat degradation; and enhance habitat through development practices.

The state of Washington concurs with this published policy for fisheries management and believes this policy should be extended to all wildlife species. Further, the state requests that the following measures be adopted on the Umatilla National Forest to meet state goals and objectives:

1. Protect the existing habitat from degradation through adoption of the Riparian Habitat prescription discussed in Attachment B, and use Best Management Practices (BMPs) as interim guidance until development of specific, measurable standards;

2. Provide total mitigation for areas degraded as a result of management activities by: (a) replacement in-kind on-site, or (b) replacement in-kind off-site, or (c) other replacement negotiated with state agencies of jurisdiction; and

3. Undertake habitat enhancement projects where benefits to the fisheries and wildlife resource can be clearly demonstrated.

The Sikes Act provides that Forests must jointly develop with the state a Statewide Comprehensive Plan, and provide funding for fish and wildlife improvements. This plan is years overdue. We would like to work with you in the development of such a plan.

A. The Forest Plan should include a comprehensive and effective monitoring plan for fish, wildlife, and water quality which is designed to track model assumptions and parameters.

Since indicator species are used to represent all forest animals, it is not only important to study habitat and populations for indicators, but also the linkages between these and non-indicator wildlife species in order to validate the concept that all species' needs will be met by providing for indicator species. The proposed plan implies that the states will be monitoring impacts to old growth dependent species. That information is not collected under existing management and a budget is not available to collect it. Unless the Forest is prepared to fund the state to perform this function, we shall continue to see it as a Forest responsibility, as confirmed in the U.S. Forest Service planning regulations. Additionally, the monitoring plan should be able to determine how well the plan's objectives have been met and how closely management standards and guidelines have been applied.

For an effective monitoring program, the monitored parameters must be measurable and should be indicative of all affected parts of the environment. Sufficient accuracy must be attainable and measurements should be completed within a time frame adequate to prevent irretrievable commitments of resources. A well-defined feedback loop is essential to the success of the monitoring program.

As with standards, variability thresholds should be measurable. Use of subjective terms and qualifiers in setting these thresholds eliminates the consistency needed for their proper application.

We have some concerns regarding report accountability. Reporting has been assigned to various staff officers at varying time periods, but no description is given who will collect the data, what will happen if monitoring is not fully funded, how the monitoring data will be integrated among resources to evaluate cumulative effects in addition to specific resource effects, and the timely availability of this data to other resource agencies with expertise and jurisdiction.

B. Wildlife Minimum Management Requirements (MMRs) should not represent the standard approach to management throughout the range of alternatives.

We have serious reservations in regard to the way wildlife MMRs were developed, the way the Umatilla National Forest has chosen to incorporate them in planning, and the fact that they were selected as management levels in the preferred alternative and other alternatives.

We cannot acknowledge the validity of the biological parameters and assumptions used by Region 6 to establish the original MMRs for wildlife, although we accept that they were a good faith effort based upon the best available data and professional judgment. We find the recent changes,

both in the indicator species themselves and in dispersal distances, in response to U.S.D.A.'s (Department of Agriculture's) request for "flexibility," to be suspect since a Region 6 task force did not identify any new data to account for the loosening of restrictions.

The Forest has reduced all old growth MIS (Management Indicator Species) MMR numbers due to overlap. Further, in all alternatives, MMR numbers for all species were "adjusted" to include overlap with other land allocations that could provide mature or old growth habitat. There are several concerns with these methods. MMR levels were never intended to be management levels, but were to be used in benchmark analysis and in the no action alternative. The Umatilla National Forest has chosen MMR levels and then further reduced them due to overlap. Overlap of finite, discrete units of habitat designed to maintain all old growth related species will force predators and prey into concentrated areas and may increase competition and predation on prey species. Overlap of MMR species with other MMR species as well as overlap of MMR habitats with other land allocations provides no opportunity for replacement of habitats due to catastrophe, nor does it account for the fact that not all areas will be occupied by a species at any one time For some species at low population levels, habitat occupancy of about 50 percent is typical. Effective populations, then, need to be calculated in terms of all relevant parameters.

We recommend that more habitat areas be established for old growth dependent species. These habitat areas would be in addition to those identified at the MMR level and separate from other land allocations. Biological estimates indicate that at least 30 percent more habitat areas would be necessary to replace stands which would eventually be lost to fire, blowdown, or other catastrophe, and the less than 100 percent occupancy rate. Without replacement stands, the loss of even one habitat necessary to the distribution grid has the potential to bring one or more species below MMR (legal) levels.

Finally, it is not made clear whether acres assigned to mature and old growth dependent species are all suitable, or what proportion of acres and habitats might be capable at present. For instance, have any acres been assigned out of the unsuitable category? Specifically, have acres of overstocked or stagnated stands been assigned? Our suggestion that additional areas be assigned to old growth dependent species includes the restriction that all acres be suitable, or the next oldest stands if suitable habitat is not available within the appropriate dispersal distance. We are also concerned that the Forest may harvest the habitats of old growth dependent species which occur outside other no-cut prescriptions. Until it is shown that old growth characteristics and habitat conditions can be successfully and reliably recreated through silvicultural practices, allocations should consist solely of dedicated stands.

C. <u>The economic value of all resources should be afforded that same degree of treatment</u>.

Economic analysis is an integral part of the forest planning process. Cost, benefit, and present net value (PNV) are highlighted in the comparison of alternatives and are an integral part of determining net

public benefits, as required by 36 CRF 219.12(f) Because the state administers resources whose economic values are quantified as part of these evaluations, we are concerned about what may be inequitable treatment given various resources.

This inequality arises on more than one analysis level. Use of the allowable cut effect and the four percent discount rate affects the economic benefit of intensive timber management practices including old growth harvest. We believe the plan underestimates the value of non-commodity resources for PNV quantification Animals are public resources which, in the economic sense, are vital inputs for a variety of consumptive and non-consumptive goods. Enhancements represent real benefits and impacts produce real losses. Both affect PNV.

There are several ways that PNV figures are biased away from fish and wildlife values and towards timber. First, an arbitrary reduction of 37.5 percent was made from the numbers derived by Loomis and Sorg for the 1985 RPA documents. We believe the justification for that reduction (Appendix B, pp. 76-77) is not economically valid. With Travel Cost Method (TCM), an implicit demand curve is mathematically derived, and consumer surplus determined Net, not total, willingness to pay is measured by consumer surplus. We agree that TCM studies are highly site-specific. However, the conjecture that study locations are typically high quality sites should be substantiated and quantified by sensitivity analysis before any value reductions take place.

In fact, there is reason to believe that the Loomis and Sorg results underestimate applicable wildlife values. TCM measures only the recreation use component. Other recognized sources of value include existence of the resource, option to make future use of it, and ability to pass on the resource to future generations. For certain ecosystems and some species of fish and wildlife, especially those that are well-publicized or whose existence is threatened, we would expect these components to add significant value. They are ignored in your evaluation process

Another biasing factor is the failure to incorporate fish and wildlife losses as costs in PNV calculations. We believe such losses are large, both cumulatively and for certain site-specific management actions. Failures to count these impacts as costs in your analysis provides an implicit subsidy to the management activities which cause the adverse effects. From a technical standpoint, it should be pointed out that the proper measure of value for this purpose is willingness to accept payment (WTA), not willingness to pay (WTP), which is determined by TCM. WTA magnitudes are typically higher than those of WTP. In addition, losses should be measured relative to existing condition of the resource, not to its future condition under the current direction alternative.

Finally, the plan introduces a distinct bias by attributing a one percent real growth rate to timber prices, while holding other resource values constant over time. Taking into account your statement that demand for fish and wildlife oriented recreation is expected to increase 1-2 percent per year, we feel that timber values are unjustly favored by this assumption. At a minimum, studies on trends for fish and wildlife values must be found to substantiate a flat growth rate before such treatment can be considered valid.

D Restoration of fishery losses requires a firm and dependable funding source

The state of Washington's fishery policy stresses habitat protection and mitigation for fishery resource losses, and we have concern over the Umatilla's basic treatment of adverse fishery resource impacts Resource losses should be regarded as a definite, mandatory mitigation responsibility, not as an optional planning element or discretionary budget item. Our prior responses to other draft National Forest plans have also highlighted this important policy. We request that the Forest treat fish production losses (attributable to their operations) as a mitigation need requiring the firm, dependable funding that is fitting for a definable resource commitment.

The logic for this request is based on perpetuation of fishery resources. If a hydropower developer, for example, blocked 30 percent of the fish production potential of a watershed, there would be no question as to the mitigation responsibility involved and its level (a full 30 percent) The cumulative effects of environmental alterations such as logging and associated road building which would lower production of fish by the same 30 percent should be treated in a comparable manner Timber harvesting and associated activities such as road building have become major exceptions to this rule of compensation.

OTHER KEY POLICY CONCERNS

A The U S Forest Service should participate with the state and other forest landowners in watershed management plans where needed to coordinate harvesting and protection measures

It is state policy to encourage forest landowners in specific watersheds and others to voluntarily coordinate land use and development plans to provide the most effective pattern of development to meet the needs of landowners while protecting watershed values such as fisheries habitat, water quality, and stable water flows. In this way extra protections planned in one part of a watershed can be taken into account elsewhere in the watershed, even across ownership boundaries Likewise, plans for more intensive development activities in one part of a watershed need to be taken into account by landowners elsewhere in the watershed, considering the specific resource needs and past activities in that area. This will be especially important if the USFS plans more intensive localized harvesting in shared watersheds as part of a strategy designed to maintain forest-wide harvest levels while also providing greater wildlife habitat protection

The Umatilla plan does not mention the possibility of multi-owner watershed planning. A policy stating an intent to cooperate with watershed plans begun by the state should be provided.

B Protect Historical and Archaeological Sites.

It is the policy of the state of Washington to designate, preserve, protect, enhance, and perpetuate those structures and sites which reflect outstanding elements of the state's historic, archaeological, architectural, or cultural heritage.

In line with this policy the Umatilla National Forest has developed a professional program to identify, evaluate, and protect significant archaeological sites important to Washington's heritage. The program adequately addresses preservation issues and does not conflict with state policy

C. Protect Air Quality.

The cooperative Smoke Management plan, which sets standards for smoke management in the state, was developed with the state's air quality goals in mind The Forest Service is a cooperator and complies with the comprehensive guidelines of the plan. All Forest Service plans adopt these standards by reference and therefore comply with state standards.

D. Protect Water Quality.

The state of Washington and the U.S. Forest Service share the common goal of protecting state water quality. Land use practices on Forest Service lands have the potential of modifying both the quantity and quality of our state waters Sedimentation from road building, logging and grazing activities can degrade existing water resources

The state's major concerns is how sedimentation will be controlled. Most sediment control guidelines, standards and BMP's are not specific. The state believes definitive standards must be set to ensure water quality criteria can be met. This could initially be accomplished by creating a set of minimum standards controlling practices responsible for sedimentation, i.e., road should avoid riparian zones, wetlands, and meadows and road densities should be limited. The use of minimum standards assume that the forest will strive for better and more creative controls but assures at least a set of minimum requirements. Evaluation of alternatives is based on predicted sediment loading by alternative, however, there is very little discussion of the sediment model or its documentation. Since we cannot determine how effective the model is, we have no accurate way to evaluate the alternatives. We need to be able to validate the model and determine its effectiveness. Consequently, we can only treat the data in the alternatives as indices rather than actual yields

E. The State's Water Resources Must Be Properly Utilized and Protected.

The Forest Service has broadly addressed the issue of management activities/impacts on water quantity but provided little to no detail on the cumulative impacts of forest activities on watersheds and water resources. The state of Washington's is responsible for the granting of water rights. The Forest Service needs to address the matter of federal reserved water rights as part of their planning process so that the state can more efficiently allocate, protect, and adjudicate its water resources. The state is also responsible for the protection, beneficial allocation and utilization of permits for environmentally sound water resource projects. The Forest Service needs to stay in close touch with state and regional water resource planning groups (i.e., the State Hydro Power Task Force, and the Northwest Power Planning Council) to ensure close state/federal coordination. The Forest Service should also take a broader view concerning hydropower and the protection of instream values, i.e , rivers need to be protected from hydro-development that would produce unnecessary power.

One of the major goals of the state is to protect and preserve instream values through the establishment of instream flows. When water withdrawal is proposed on Forest lands either the Forest Service or the applicant should consult with the Departments of Ecology, Fisheries, Wildlife and affected Indian Tribes regarding cumulative impacts on fisheries, wildlife and water resources and mitigation strategies

6024J

ATTACHMENT B

STATE ALTERNATIVE TO BE MODELLED BY THE UMATILLA NATIONAL FOREST

N - 360

FOREST-WIDE STANDARDS AND MANAGEMENT STRATEGIES

The state of Washington would like the Umatilla National Forest to construct a state alternative which would enhance the elk population while supporting a viable timber industry in the Washington section of the Forest. The state is concerned that the DEIS presents only two alternatives (E and G) which maintain or enhance the current level of elk habitat through the fifth decade. Yet these alternatives result in a significant reduction in timber availability and, therefore, are in conflict with the state's community and timber stability objectives

The state believes it may be possible to construct an alternative, following the general and specific standards and guidelines in this attachment, which may result in both a stable supply of timber and enhancement of the elk herd. This attachment contains (1) a general discussion of the standards and management strategies we would like the Umatilla National Forest to use in designing this alternative and (2) specific standards and guidelines to be utilized in the formulation of the state alternative.

The elk population in the Umatilla National Forest represents one of the largest concentrated herds in the United States. It is a national as well as a state resource, for hunters and non-hunters alike. However, elk range is shrinking as urban sprawl and the demands of modern life compete for elk habitat This along with the fact that Washington has the highest density of elk hunters and the greatest elk/hunter ratio of any state in the west has resulted in a number of management strategies to prevent the overcrowding of hunters and excessive harvest in an attempt to preserve a quality hunting experience. Clearly, as the demand for big game-oriented recreation increases, this situation will get worse, without additional habitat protection. Increasing state and national interest in the big-game recreational opportunities in the southeastern part of the state necessitates that these animals be managed to ensure a sufficient population to meet future demands

The prime attraction of elk results in substantial benefits for both the state and local economies For example, in the 1986-87 season, 10,550 elk tags were sold for hunts in the Washington portion of the Blue Mountains. More than 10,000 hunters spent over 42,820 days in pursuit of elk in Washington's Blue Mountains, spending an average of $75 per day on food, lodging, transportation, equipment, licenses and tags. The state believes that such expenditures can be a boost to local economies and, as such, help meet another key state objective, diversification of local economies.

The state of Washington is aware that elk populations have, in the past, caused property damage, especially to some local agricultural lands. A process has been set up in the state to compensate property owners for these kinds of damage claims The state believes, however, that a more effective strategy for minimizing such damage would be to provide for adequate winter range to keep elk from damaging private lands. This is what the proposed state alternative would hopefully accomplish. Habitat protection in combination with other techniques may very well be the most effective management strategy for minimizing the amount of local agricultural damage.

I. GENERAL STANDARDS

A. WILDLIFE PROTECTION SHOULD EMPHASIZE MEETING STATE SPECIES GOALS.

We consider winter range management to be one of the most critical issues in this forest plan. We are especially concerned with the amount retained in thermal cover and the disturbance resulting from vehicle use or logging activity.

The DEIS states that Washington Department of Wildlife (WDW) species goals for big game will be met in several alternatives. We have a number of concerns with the way big game numbers have been calculated, how impacts were evaluated, and therefore the level of outputs predicted. It is unclear whether species goals will be met in any alternative, let alone several.

Parameters used, assumptions made, and data incorporated for coefficient development are poorly defined. We question the validity of parameters selected and coefficients developed. The population increases are hypothetical in nature, based on a habitat effective index (HEI) formula. The formula assumes that harvesting timber creates forage, and the increase plus the proposal to close 48 percent of new and existing roads will increase wildlife habitat. Finally, big game population data are lumped Forest-wide and does not, therefore, address individual state herd ranges and their needs.

Several management strategies (A10, C3, C4, C7, C8, D1, E1, & F4) contain minimum habitat effectiveness requirements for elk. We support the concept of protecting elk habitat forest-wide. However, we have serious concerns with the existing method of implementing that concept. The minimum elk habitat requirements are currently expressed as a percent of potential habitat effectiveness, including discounts for open roads. We oppose the concept of a minimum percent of potential elk habitat effectiveness. The use of "potential effectiveness" can be disastrous in the case of unmanaged habitat areas with existing habitat effectiveness ratings which are medium to low.

We also have several concerns with the existing process for calculating HEI. Before we can accept the HEI process, we request several changes in the method of HEI calculation. The basis of our concern with the HEI process is its inability to identify effects on herd productivity and the loopholes that allow excessive levels of thermal cover harvest.

For the purpose of this plan, we assume that ongoing negotiations will resolve our concerns with the calculation of HEI. Even recognizing those problems with HEI calculations, we propose that the minimum habitat level used to protect elk habitat in the management strategies be expressed as a Habitat Effectiveness Index (HEI), not a percent of potential habitat effectiveness.

Certain Plan Management Strategies have unacceptable definitions of thermal cover which would result in a loss of their usefulness as thermal cover on elk winter range. We are opposed to the use of 40 percent canopy closure as a minimum since adequate thermal cover has been defined to have 70 percent canopy closure. The use of a ten-acre minimum stand size for thermal cover conflicts with the recommendations of Thomas et al, 1979. They found that "thermal cover units less than 30 acres in size are not big enough to accommodate the herd behavior of elk." Page-specific comments and Appendix A1 offer our specific recommendations for winter range strategies.

The Grass Timber Mosiac Strategy (GTM-CB) and several other strategies have non-scheduled harvest listed as their timber management method. We support that designation because it removes the acreage from the ASQ, thereby not forcing additional harvest on other acres to make up for unharvestable timber in low production (GTM) sites. However, the thermal cover contained in CB, and others, should not be used to harvest ponderosa pine stringers when planned timber sales border GTM. We also want to be assured the ponderosa pine in the GTM will not be used to increase adjacent timber sale values, increase their sale price, or improve their potential for sale.

In addition to the above changes, which are necessary to make the indicated management strategies acceptable, we have the following recommendations. Refer to the "Road" section for discussions of "open" and "closed" road definitions. We recommend continuation of the joint development with the state of a process to protect calving areas and map critical winter range. The winter range strategy should contain a seasonal restriction prohibiting ORV use during the winter.

The opportunity for improving the type and quality of wildlife-oriented recreation is very important to the state. Unfortunately, it is difficult to assess the impacts on recreation because of several conflicting findings in the document. For example, the analysis predicts, "Alternatives D, G, and E increase big game user days by over 18 percent. (p. IV-74)" and, "Alternatives A, B, H, and I could cause a decrease in hunting. (p. IV-118)" and, Alternatives H, I, and Fd will decrease recreational use of the forest. (p. IV-167)." In spite of these findings, the document claims, "The potential elk population and amount of elk hunting change relatively little with any alternative. (p. IV-118)" and, "None of the alternatives will alter traditional patterns of hunting during the next decade. (p. IV-157)."

There are some demands that are met in every alternative, for example. "All alternatives meet the historic demand for timber. (p. IV-34)" and, "The red meat processing sectors will enjoy positive changes in income for all alternatives. (p. IV-168)" and, "Each alternative will create an increase, on the average, in payments made to the ten counties. (p. IV-168)" and, "the recreational opportunity supplied in the roaded natural and roaded modified setting more than doubles the acreage necessary to meet user demand. (p. III-56)."

There are also some demands that will not be met in ANY alternative. "Big game hunting demand will always exceed the maximum supply over the RPA planning period. (p. 2-11)", "Demand for big game hunting will increase through the next decade at a rate of 1 to 2 percent per year. (p. III-32)," "Demand for hunting recreation will increase 27 percent by 2030. (p. III-55)."

To resolve the supply and demand inbalance, the plan recommends some methods that will not work. For example, "More hunting capacity can be created by developing more access and skewing opportunities toward the roaded modified end of the recreational opportunity spectrum. (p. III-57)." Actually, increased access will decrease habitat effectiveness for big game, reduce the opportunity for a quality hunting experience, and increase the rate of harvest, which will force a reduction in total hunting recreational opportunity. And, "Resolving the hunting issues will take care of the majority of other dispersed recreational issues. (p. III-58)." We believe that increasing road density (access) WILL NOT resolve the hunting or other nonmotorized recreation issues.

"Estimated populations of indicator species will decline in every alternative. (p. IV-71)." We do not consider the planned reduction in population levels of indicator species, and all the other species that depend on the habitat types which the indicator species were selected to represent, to be consistent with RPA, the Multiple Use Sustained Yield Act, NFMA, and the USFS planning regulations (manuals).

All alternatives range between 46 and 61 percent of potential population levels for old growth indicator species. In terms of wildlife numbers, the planned reduction in wildlife will be greater than is presently estimated because the reductions are in all old growth dependent species, not just indicator species, and because a lack of geographic specificity in the modelling does not allow for fragmentation, catastrophic habitat loss, or lack of connecting corridors between habitats.

B. MANAGEMENT OF OLD GROWTH SHOULD EMPHASIZE THE INTEGRITY AND PROTECTION OF THE TOTAL ECOSYSTEM.

Strong reliance on indicator species for defining old growth retention outside unsuitable lands or wilderness is a plan weakness. This approach downplays the complexity of these ecosystems and their interaction with other forest habitats. We believe that old growth management should take into account all known ecosystem functions not just management indicator species. For example, provision of optimal thermal cover on winter range is thought to be limiting on some ranges for big game. A related issue is production of lichens, a critical winter source for elk. Widely-distributed stands of old growth also serve as a gene pool reserve and source of mychorrhizal fungi. Other features to consider are the need of "interior" species for seclusion, within-stand diversity, stream shading, large organic

debris, and an abundance of large dead and defective trees Also, old growth ecosystems are the most stable, in this respect, they are very well suited to support wildlife species that are long-lived and have low reproductive rates Most animals at the top of the food chain, including hawks, have these characteristics.

C THE FOREST PLAN SHOULD SPECIFY A SEPARATE AND DISTINCT RIPARIAN MANAGEMENT PRESCRIPTION WITH CLEARLY DEFINED MMR's (MINIMUM MANAGEMENT REQUIREMENTS) THAT CAN BE MEASURED AND MONITORED.

Riparian ecosystems make up only a small portion of the forested land base on the Umatilla National Forest, but support a greater density and diversity of wildlife than any other habitat type. Several wildlife species, including certain threatened and endangered species and all species of fish, are dependent on riparian habitat to meet all or a portion of their life requirements. Management within riparian zones should emphasize the needs of wildlife and fish. To remedy particular shortcoming noted in the plan's standards and guidelines for riparian zones, we have a number of recommendations.

The plan should specify a separate management prescription for riparian zones This would allow specific calculation of any timber falldown which could then be adequately accounted for in reductions of ASQ (Allowable Sale Quantity). Without such an accounting, timber inventory is inflated In defining zone boundaries for planning purposes, we suggest adoption of the area proposed by Meehan et al and Swanson et al, which includes the body of water and all vegetation directly influencing aquatic processes At a minimum, this would extend from the ordinary high water mark a distance equal to the potential height of the tallest trees. Soils, vegetation and topography should then be used to modify zone width, where appropriate For example, flood plains and associated wetlands should be incorporated This riparian zone prescription should apply to all waters bearing fish as well as most small Class III streams featuring key wildlife habitats

Management within the riparian zone should emphasize maintaining cover and vegetative diversity, stabilizing soils, and recruiting large organic depris and snags. Low management intensity would be appropriate for riparian zones. LOD should be retained at 750 pieces per mile where possible. Large snags should be retained at the level needed to provide for 100 percent of the potential population for cavity excavator species Down wood for wildlife should be available at a minimum of 4 logs per acre, 20" at large end and 20' long, or the largest size available Where cuts occur, selective harvest of intermediate-size trees 5" dbh to 18" dbh would be best for wildlife where a 70 percent canopy can be retained. Clearcuts should be avoided, unless a site-specific justification of fish and wildlife benefit can be made. Clearcut units should be limited to 5 acres. Under any cutting method the rotation in big game winter range should be long to produce optimal thermal cover, with maximum harvest per decade covering no more than 5 percent of the zone in any one watershed Roads should be placed 250 feet or more from streams or wetlands Salvage sales are inappropriate for riparian zones.

It is also a concern that, although livestock have created damage situations in riparian zones, including puddling, compaction, and vegetation removal, the intention is to increase the use of the forage in these zones by livestock Livestock should be excluded from the wetted perimeter, and we suggest that where damage has occurred, livestock should be excluded and the structures necessary to prevent encroachment should be funded by the grazing program. Where grazing will be allowed, structural improvements should be constructed to control heavy use areas.

The added protection provided by our recommended changes above will also limit those areas in need of repair or improvement by limiting riparian damage from timber or livestock management. This will reduce the need for high levels of funding for mitigation and assure the most important and cost-effective areas are improved. We suggest that non-structural improvements receive a higher priority throughout the forest.

There should also be some recognition of the Memorandum of Understanding (MOU) with the state of Washington regarding activities in fish-bearing waters. In that MOU, the Forest Service has agreed to comply with the State Hydraulic Code.

We are concerned that the minimum management requirements (MMR's) for riparian areas provide standards that can be measured and monitored. Best management practices are qualitative at best, and it is documented that the degradation of stream habitats and water quality has occurred despite the use of BMP's. We recommend that the riparian prescription provided above be adopted for general use in all zones. Where site-specific adjustments will be made to the prescription, the recent state Timber/Fish/Wildlife Agreement should be applied as an MMR. Best management practices should continue to be applied interim to the development of a set of specific, measurable standards.

D. A SPECIFIC MANAGEMENT PRESCRIPTION FOR DEAD AND DOWN WOODY HABITAT MANAGEMENT SHOULD BE CREATED AND USED IN THE FORPLAN MODEL AS AN INVENTORY CONSTRAINT.

Forest Service Region 6 policy has been to maintain dead and down wood at a level sufficient to support 40 percent of the potential woodpecker populations. The MMR level for cavity nesters was set at 20 percent by way of a "best guess." We do not agree that the MMR level for cavity nesters will maintain viable populations of all dependent species. Thomas et al (1979) defines the 20-40 percent level as, "Snag habitats produced by these levels are marginal and will probably not support viable populations" and the 40-60 percent population level as, "Snag habitats produced...will probably maintain viable populations."

The Forest is required by regulation to maintain viable populations of all native, vertebrate species. We consider populations with only the "probability" of viability to be at risk, and in violation of the intent of the regulations. We suggest the Forest-wide standard be at

a population level defined as "Snag habitats produced will almost certainly support highly viable populations ..." by Thomas et al (1979) Further recommendations for specific snag levels by management area category are included in page-specific comments. We also have concerns about the distribution of snag habitat because all dependent species are not as highly mobile as birds and bats We request that a distribution standard be included in your prescription so that habitat will be provided within the dispersal distance of the least mobile dependent species.

An inventory constraint will certainly be necessary to produce the appropriate snag levels, particularly areas with shorter rotations where the large diameter snags would not normally be produced before harvest occurs. Providing such a constraint will not only ensure the snags will be allowed to accumulate, but will provide a measure of the amount of falldown in timber ASQ Without calculation of this falldown, which should be coordinated with other forests, we expect your timber inventory, ASQ, and receipts to be inflated above actual levels We also have a concern for the larger sizes of down wood, 20" at large end by 20' long or more, and we suggest similar treatment as noted above for snag habitat.

Finally, the number of snags retained during harvest, in our experience, rarely reflects the number remaining a few years out into the future. Additional snags and green trees must be left to account for losses due to fuelwood cutters, fire, safety considerations, and natural decay. We suggest a vigorous and effective enforcement effort, following the issuance of Forest-wide direction that standing dead or live trees may not be taken as fuelwood except in excess of wildlife needs. Similarly, salvage sales should be limited to those necessary to prevent the spread of pests or diseases, except in excess of wildlife needs.

Monitoring/research should be conducted to, (1) determine population trends at varying snag management levels, and (2) refine or substantiate the definitions used in Thomas, et al (1979).

E. ROAD AND TRAVEL MANAGEMENT SHOULD EMPHASIZE AVOIDANCE OF SPECIAL HABITATS, UNSTABLE SLOPES, AND SEDIMENT-VULNERABLE AREAS. OPEN ROAD DENSITIES SHOULD BE COMPATIBLE WITH PREVAILING WILDLIFE USE.

Road construction, use, and maintenance present the greatest potential impact on the environment of all forest practices At least four acres of wildlife habitat are directly removed for each mile of new road constructed. Increased access leads to more poaching, harassment, and vehicle/animal accidents As found by Perry and Overly, and others, many species of wildlife avoid roads for extensive distances, habitat carrying capacity and wildlife numbers are reduced. In addition, roads are a major source of increased sedimentation in forest streams

Excessive road densities decrease high quality viewing and hunting opportunities. In Washington, public surveys conducted by the Washington Department of Wildlife and USFS regarding the Cooperative Road Management Program have consistently shown that 75 to 85 percent of those responding support the road management plan which places periodic limits on public access

The planned future road density on the Umatilla Forest of more than two miles per square mile open to public vehicular traffic is of concern in terms of its impacts on wildlife, particularly when it is considered in light of the fact that the density figures likely include roadless areas, other no-cut areas, and exclude non-system roads. Actual road densities in suitable forested acres are likely to be considerably higher than expressed. Again, throughout the documents, inconsistencies are apparent in the number of miles of roads open and closed, the proportions open and closed, and the land base considered "roadless" or "unroaded." This makes quantitative assessment of the impacts to wildlife and recreation impossible. The Plan should identify miles of open and closed roads (including non-system roads) on a watershed basis and describe the methods for implementing closures, timing of closures, and locations.

We would like to review a current Umatilla National Forest Travel Plan because there are other issues relative to roads and vehicular activity that can impact wildlife and their habitat. For instance, vehicles with axles under 40" are an allowed ORV use anywhere in an area even if the roads in that area are closed to vehicles. We would like to see vehicle closures apply to all vehicles and certain roads converted into challenging ORV tracks. Besides Wilderness, the only allocations that prohibit ORV use completely are Research Natural Areas and the Mill Creek Watershed. ORV use should be eliminated on critical winter range and GTM between December 1 and April 30 and on identified calving areas during the calving season.

We disagree with the belief that roadless areas need to be roaded and managed in order to provide high quality big game habitat. That position ignores the critical nature of security areas Wildlife use in unroaded (undisturbed) habitat is always higher than in similar roaded habitat. Some species are virtually eliminated by actively used roads. The draft EIS does not recognize the value of undisturbed habitat conditions when it concludes. "Roadless areas can be developed to provide wood products, big game habitat, and roaded recreation " Building roads and harvesting timber in roadless areas will not provide both roaded recreation and big game habitat Roaded recreational opportunity can be increased by developing roadless areas, but the supply for roaded recreational opportunity already exceed the demand. Further, increased and easier access to back-country areas results in more restrictive hunting regulations, less hunting freedom and opportunity, and fewer mature bulls and bucks

Preserving management options is a strong argument in support of resource planning. Developing (roading) existing roadless areas will preclude future, primitive backcountry opportunities

Differentiation between standard vehicles and vehicles under the 40-inch minimum is not apparent. Therefore, from a wildlife standpoint, these roads are still open But, under the Forest Plan definition of a closed road, the Forest Service takes credit for a closure when, in reality, no closure exists The definition of a closed road has been a persistent problem The concept of road closures improving habitat is the basis for maintaining HEI values when thermal cover is harvested To compensate for a drop in HEI, local roads are closed to adjust the HEI to the desired level. When a road closure allows thermal cover removal, and for some reason vehicles still use the road, then the closure is only mitigation on paper.

A definition suggested by the State of Oregon is simple and understandable. In order to count as a closed road, the road MUST have a physical, maintained barrier, AND less than one vehicle trip per week during the normal operating season. Often, sale activities, including harvest, sale prep, and post-sale cleanup, will involve the roads which were counted as closed in the HEI evaluation In that situation, an equal amount of existing road mileage must be closed until the required barrier is in place and usage levels drop to within specified limits. The language in the plan acknowledges the need to make sure closed roads are not used, but the exact measures are not defined and enforcement efforts are not emphasized

To mitigate adverse effects from forest roads, we urge the following measures be adopted as standards throughout the Forest.

1. New road construction should avoid areas described by Brown et al and Thomas et al as special habitats. These include riparian zones, wetlands, meadows, and places with critical uses, such as deer and elk travel corridors and calving areas, and you old growth habitat MMR areas. Special habitats and natural and created openings should be screened by buffers of natural vegetation

2. It is also critical to limit the density of roads open to public traffic to accommodate the prevailing wildlife use. Our recommended forest-wide standards are included in page-specific comments and Appendix A1

F RANGE MANAGEMENT SHOULD EMPHASIZE AVOIDANCE OF ADVERSE WILDLIFE/LIVESTOCK INTERACTIONS.

There are a number of potential sources of conflict between livestock and wildlife The levels of increase in AUM's that appear in alternatives are, therefore, of serious concern. No mention is made as to how the increases in domestic livestock densities will impact elk use and distribution. Research has proven elk exhibit an avoidance response toward cattle. Also, no mention is made as to how domestic sheep-bighorn sheep disease conflicts will be resolved, or whether domestic sheep allotments will be established in or near

primary bighorn sheep range. Cattle can transmit brucellosis and bluetongue to deer, and in dry summer months often feed on critical food sources for wintering big game. Along streams, cattle often cause bank sloughing and sedimentation, adversely affecting fish habitat.

Detailed information on grazing and range condition is lacking in your documents. Information that is provided is often contradictory. We would like information regarding actual grazing unit sizes and locations, AUM allocations, and timing by unit. Surveys indicate that increased livestock use on winter ranges will increase conflicts in some areas. "A 1980-81 winter range survey indicated that 71 percent of the surveyed area is in fair to good condition while 29 percent remains poor to very poor condition." Please identify the potential conflict locations, specific improvement goals, or the methods to prevent continued overuse of winter ranges.

Estimates of forage production and allocation, both by number and by percent, are inconsistent throughout the documents (see page-specific comments) and need to be clarified Your analysis of potential impacts becomes suspect when the following two statements are compared·

"Water quality and timing of flows are not expected to be impacted by livestock grazing under any alternative." (p. IV-13) and "Logging and road building tend to intensify livestock use in the riparian area." (p. III-29).

Almost 1/3 of the Umatilla National Forest range land is considered to be in poor to very poor condition. Yet, in some areas, grazing use continues to exceed capacity. We request that the Plan specify that existing problem areas will be rehabilitated prior to any increases in AUM's being granted by the Forest. The predicted forage increases in all alternatives are treated as if they require additional livestock. We suggest that any increase in forage production be documented and big game use be reviewed before increasing livestock. We request that allocations be sited and timed to avoid adverse wildlife and livestock interactions. On elk winter range, cattle should be taken off the range before October, and in dry summer months should be removed before they switch to preferred wildlife winter forage. How domestic livestock densities impact elk use and distribution should be addressed before any increase in AUM's is approved. The disease conflict between domestic sheep and bighorn sheep should be solved by maintaining a 5-mile distance between big horn range and sheep allotments. A one-decade delay in increasing livestock numbers would allow time to develop detailed forage production reports and utilization plans.

G. FISHERIES RESOURCES NEED GREATER PROTECTION AND ENHANCEMENT; MMR'S NEED TO BE DEVELOPED FOR FISH.

One source of concern stems from the decision of Region 6 not to develop MMR's for fish. Planning requirements should be the same for all wildlife species, regardless of difficulty. We do not agree that

BMP's are sufficient to avoid adverse impacts to fish habitat as stated in the MMR documents In fact, USFS planning documents state that adverse effects have occurred and that fish habitat will be degraded in all alternatives and populations reduced, except for expected mitigation and enhancement activities. We question the assumption that unspecified habitat improvement projects with uncertain funding will be sufficient to mitigate any fish losses from timber and range management and road construction.

The fish resources of the Umatilla National Forest are important economically and recreationally. Because the state places high priority on protecting and enhancing fish populations and habitats, we are concerned with the treatment of fish in the Plan. Due to the fact that demand for fish is expected to significantly exceed supply in the future, we urge the Forest to protect existing fish habitat and, where benefits can be quantified, undertake enhancement measures Considerable effort and funds are being spent under the Northwest Power Act Fish and Wildlife Program to protect, mitigate, and enhance fish and wildlife. This includes habitat improvements and passage projects. Forest management activities should complement these efforts and should not negate the benefits to fish and wildlife provided in implementation of the Fish and Wildlife Program. The Forest should not, however, substitute enhancement dollars for habitat protection or mitigation/rehabilitation responsibilities.

The plan's coefficient development for fish needs to be explained. We believe, at a minimum, it needs to provide for a link between fish habitat capability and management activities. All parameters that are influenced by activities and are important in maintaining fish numbers should be included, except those excluded by sensitivity analysis Where data are lacking to develop a coefficient, the need to gather this data must be incorporated in the monitoring plan.

In general, the source or method of developing figures of fish production, production increases, user-days of recreation and other specific values for wildlife are not cited or described. It is essential to qualify the claims of existing situation, benefits of improvements or increased recreational use or demand, with more detailed explanation or, at the very least, cite a specific source of the information.

In general, the fisheries aspect of management has been well represented throughout all the alternatives which were presented. However, we consider some of the basic assumptions and approaches to managing the forest for the fisheries to be in error. Many of the Forest's approaches to management concerning water quality and quantity are supported by the Barometer Watershed Study. The Forest indicates that no proposed management practices in their alternatives will measurably alter water discharge amounts or the timing of that discharge This assumption does not seem reasonable in light of other studies that stress the importance of watershed effects on timing and quality of spring and summer runoff, especially in areas receiving a major percent of annual rainfall in the form of snow.

Extended, controlled runoff without excessive sediment transport is a benefit of a healthy watershed. Most of the fish populations and benthic organisms could be negatively impacted by increased flow and/or increased sediment in streams during spring months during their spawning periods.

Using a sediment yield model as a means to address water quality appears to be appropriate. However, eliminating the deposition portion of the model from consideration on the Forest is wrong. Erosion and sediment transport may be the direct portions of the model which can be affected by forest planning and management alternatives, but deposition can occur immediately downstream from activities in critical fish spawning and rearing areas. Deposition is then an important variable to be considered. It should be replaced in the water quality analysis to account for degradation that might occur under certain management schemes.

An important factor of sediment yield is miles of road construction, accounting for about half of the forest-wide yield. Although the alternatives had a wide range of proposed road construction (600-1100 miles in the first decade), that did not appear to have a correspondingly equivalent effect on sediment yield. We seriously question whether doubling road construction can cause only a 12 percent increase in sediments entering the stream channel even under BMP's The Forest needs to reassess erosion and sediment yield, especially from Class III and IV streams.

Soil disturbance within riparian zones is critical. It was unclear in the BMP's whether the "no more than 10 percent soil disturbance" level was from logging activities or road building. Road building would have potentially greater impacts on the streams due to sediment yield. Soil disturbance percentages should be specified by activity type, as well, to ensure full understanding of management intent.

The general approach to fisheries management described in the DEIS is *either maintenance or enhancement through instream habitat* improvements. These enhancements appear to account for the entire production increases claimed for their various alternatives through decade 5. These increases are based on faulty assumptions. First, it is stated that improvements will be installed with monies from BPA and the Power Planning Council when and if they are available. Without those monies we must assume that maintenance is the best management you are proposing and no increased fish production would occur.

Secondly, the large enhancement budgets proposed for structures do not assess the accessibility of areas in need of improvements or the level (percent increase) in salmonid production that might occur. In many instances, natural stream channels do not need improvements, or improvements in other areas would only marginally increase fish densities. We laud your intentions, but expect the level of reasonable improvements in fish densities to be considerably less than anticipated. It is also possible that gaining access to these

areas might cause more riparian damage than would be acceptable. There is also an indication that part of the increased salmonid production projected for various alternatives is the result of, or dependent on, improved passage down-river from the forest This may, in fact, occur during the planning period discussed, but it is not an aspect of fisheries enhancement that should be considered as a result/benefit of forest planning or management. Any percentage increase in the SHCI or total poundage of production that would be represented by these down-river improvements should be removed from the DEIS and alternatives.

Finally, more emphasis should be placed on protection and natural progression in riparian areas and less dependence upon artificial structures This would also provide more direct benefits to Washington, as most of the habitat improvement expenditures are planned for Oregon It is also important that a more detailed mapping of riparian areas-management strategy for the state's proposed those areas be developed. While well-designed and installed instream structures can bring about measurable increases in salmonid populations, they are not a substitute for protection of existing high quality habitat areas

State Alternative to be Modelled by the Umatilla National Forest
Forest-Wide Standards or Management Strategies

HEI Calculations Standards

1. Determine "optimal" habitat effectiveness; i.e., combinations which provide 100 percent level. Establish minimum HEI goals for each management strategy, as we propose in this document (3). Determine "potential" HEI of management areas based on physical and biological site parameters. Determine "existing" HEI based on past management or natural history. If "potential" HEI is below the goal, then any activities that would further reduce it shall not be conducted and activities that would increase it should be considered. If "potential" HEI is above the goal, then compare to the "existing" HEI. If the "existing" HEI is below the management strategy goal, then postpone activities until the capability is regained or conduct activities that will raise the HEI. If the "existing" HEI is above the goal, then activities may occur until such time as the minimum is achieved.

2. Definitions:

   a. Unscreened openings bordered by open roads shall not contribute to the HEI as a "forage" area, this influence can extend up to 1/2 mile.

   b. A "closed" road shall have a physical, maintained barrier AND less than one vehicle trip per week during the normal operating season. Eliminate use of closed roads by vehicles under the 40-inch rule.

   c. Use definitions as established by Thomas, et al (1979) for thermal cover canopy closure, hiding cover (add 6 1/2"), patch size, and spacing.

3. Minimum HEI by Management Strategies

Strategy	Minimum HEI	Strategy	Minimum HEI
A1	--	C1	--
A2	--	C3	70
A3	60	C4	70
A4	60	C5	--
A5	60		
A6	--		
A7	--	C8	75
A8	--	D1	should not be used in WA
A9	--	D2	--
A10	80	F2	--
B1	--	F4	70

State Recommended Big Game Winter Range Management Strategy (Big Game Winter Range/North End)

1 GOAL.

Manage big game winter range by. (1) providing habitat for existing, or optimum levels of potential elk use, which ever is higher. (2) closing roads and/or seasonally restricting vehicular activity, and, (3) providing high quality forage, in sufficient quantities, for wintering big game species.

2 DESIRED RESULTS. (The Forest should display outputs by Game Management Units, which are closely related to herd ranges and watershed boundaries)

(1) Minimize redistribution of big game off public land. (2) Maintain satisfactory big game winter range to meet state population and recreation management objectives. (3) Improve big game winter range as necessary to maximize herd productivity (4) Eliminate harassment of animals during stress periods, i.e., weather extremes and early spring dispersal. (5) Reduce harassment on major calving areas during the calving period. (6) Indirectly improve the quality aspect of the recreational hunting experience.

3 DESCRIPTION

Big game winter ranges were delineated in coordination with the Oregon Department of Fish and Wildlife and the Washington Department of Wildlife This strategy applies, at least, to all of the identified winter ranges on the north half (Washington portion) of the Forest, except where a more restrictive strategy is appropriate for other resource protection, i.e., to meet old growth MMR's, etc.

The designated winter range boundaries encompass areas that provide habitat for 90 percent or more of the wintering elk population during 90 percent of the winter use period, six years out of ten. The winter use period is defined as December 1 thru April 15.

To simplify management prescriptions, winter range is divided into two categories, critical and intermediate (maps will be provided). The first category is "intermediate" and is generally well-represented on the Forest planning maps. It is found at higher elevations with generally continuous timber cover The second category is "critical". It is located at lower elevations with scattered timber or timber stringers. The relationships found in Thomas et al (1979) for size and spacing model generally apply, and will be used with intermediate winter range, but not in critical winter range. Critical winter range will not be harvested or roaded and will be excluded from the timber inventory. The importance of critical winter range to big game and its limited value for continuous timber cropping justifies its removal from the commercial forest land (CFL) base.

4 RESOURCE PRIORITIES AND CONSTRAINTS.

A. Recreation

Developed recreation is not compatible with critical winter range management goals. New sites or expansion of existing sites should not occur in critical winter range. Use of existing sites will be limited to exclude the winter use period. Developed recreation is compatible on intermediate winter range, but such recreation use will not occur during the winter use period to facilitate meeting big game objectives.

Seasonal off road vehicle (ORV) use is permitted on designated routes. ORV use will be prohibited during the winter period when big game use the area.

B. Visual

Unchanged.

C. Cultural

Unchanged.

D. Wildlife

Elk habitat on intermediate winter range will be managed to achieve a minimum HEI of 70. The existing habitat effectiveness calculation method will be altered to reflect our recommendations

Where available, a minimum of 15 percent of the winter range will be managed as satisfactory thermal cover with an additional 25 percent of the area in suboptimal-thermal or hiding cover. A total of 50 percent cover is preferred. If that is not attainable because of existing conditions, the highest percentage thermal cover potentially attainable will be created or maintained. Stands less than 400 yards wide will not be harvested and individual stands will not be reduced in width below 400 yards. The only exception to the 400 yard harvest restriction will be in the vegetated buffer strips located between roads and created openings Stands managed for satisfactory thermal cover will be a minimum of 600 yards wide and 30 acres in size, stands will be at least 40 feet in height with a canopy closure of at least 70 percent. Suboptimal-thermal or hiding cover will be capable of obscuring 90 percent of a standing elk at a distance of 200 feet or less and be at least 6-1/2 feet tall. The desired cover condition will generally appear as a multi-layered stand.

Thinning adjacent to clearcuts will not occur until the created opening provides hiding cover (6-1/2 feet).

Available forage will be allocated to meet big game management objectives. Available forage excess to wildlife and plant needs may be allocated to livestock where the range condition is rated "good" or better. Stocking rate adjustments will occur, as necessary, during drought years in order to provide adequate winter forage for big game.

Domestic sheep allotments will maintain at least a five-mile buffer zone, separating their use from bighorn sheep range as recommended by wildlife disease experts.

Big game forage and cover improvement projects including, but not limited to, prescribed burning, seeding, browse, planting, salting and fertilization may be employed. Structural improvements may be used to protect these investments.

All management activities will be restricted during the big game winter use period

Management activities will not create barriers to impede movement of big game animals.

Springs, bogs, wetlands, seeps, and other wet habitat types will be protected from harvest through the use of a buffer zone at least twice as wide as the tallest trees in the area. Road construction will avoid these areas Riparian zones adjacent to streams and intermediate range will follow the prescription provided. Roads will not be constructed within 250' horizontal distance of the stream edge.

Dead and down tree habitat will be managed to provide or maintain 75 percent of the potential population level for all primary cavity excavators

E Fish

Fish habitat improvement projects and their maintenance will be permitted.

F Range

Available forage will be allocated to meet big game management objectives.

Domestic livestock grazing is permitted under existing leases at existing levels where range condition is rated "good" or better.

Available forage, excess to wildlife needs and beyond that required for improving range conditions to "good" or better, may be allocated to livestock after a CRMP (Coordinated Resource Management Plan) effort has evaluated potential effects on resources and recommends such use, allotment by allotment.

All available range and livestock management practices may be used, consistent with the primary goal of maintaining an upward range trend towards an overall "good" range condition class.

Stocking rates will be reduced during drought years to provide adequate winter forage for big game.

Livestock use will not affect forage availability during the winter use period, and will not occur when elk use would be expected.

Structural range improvements are permitted to the extent they are compatible with the winter range management goal.

G. Lumber

Timber on intermediate winter range will be harvested on a scheduled basis. Harvest schedule, management practices, and management intensity will not compromise big game habitat goals. All methods of even-aged and uneven-aged management will be used, within the constraints of the winter range HEI model. The desired cover condition will generally appear as a multi-layered stand. Commercial thinning may be used, consistent with the need to maintain thermal cover. Other cultural practices include natural and artificial regeneration, planting improved stock when available, precommercial thinning, and noxious weed control.

Critical big game winter range will not be harvested. This acreage will be removed from the commercial forest land (CFL) inventory and the allowable cut adjusted accordingly.

Sanitation harvests will only be used when they are needed to prevent the spread of unwanted forest pests or disease. Salvage sales will only occur in accessible, managed areas of the Forest. Roads will not be constructed to facilitate salvage harvests. Unroaded areas will contribute to snag inventory.

Fuelwood cutting is permitted consistent with big game habitat and snag retention goals.

Road construction, logging activity, fuelwood collection, and most hauling will not occur during the winter use period. A similar restriction will apply to major calving areas during the calving period.

H. Soil

Ground-disturbing activities will not expose the soil on more than 10 percent of the area in any individual watershed.

I. Water

Generally meet the riparian prescription provided. Exceptions must meet the state Timber, Fish and Wildlife Guidelines and state water quality standards.

J. Minerals

When critical winter range areas will be considered for possible mineral development, the permit must be conditioned to maintain the HEI goal.

K. Protection

Actively control wildfire on timbered lands and in recreational areas. When possible, use wildfire to improve forage quality.

Emphasize the use and development of biological control methods for pest management.

L Fuels

Slash depth in timber management areas shall not exceed 1.5 feet. Otherwise unchanged from USFS draft

M Transportation

Effectively close all roads during the winter use period. All roads remaining open during the remainder of the year should be essential to an identified need. Road construction and reconstruction will not occur in the critical portion of identified elk winter range. Open road density will be reduced to a maximum of .5 mile of road per square mile of habitat on critical winter range and 1.5 on intermediate ranges (or use the "projected use, over time" method suggested by Idaho Fish and Game). Phase out the use of roads on open ridge tops and manage for vegetated buffer strips between open roads and timber openings, both natural and created. New road construction will be designed and located to facilitate eventual closure.

Trail construction, reconstruction, and maintenance is permitted. Conversion of existing roads into non-motorized trails is encouraged.

N. Lands

All delineated winter range acreage in federal ownership will continue to be managed by a public resource agency.

Acquire additional elk winter range acreage where opportunities exist.

Other Forest Standards and Guidelines for lands and land uses apply.

GTM-C* Standard (same as Forest proposed, except as follows)

Eliminate unregulated harvest in this strategy, except where a pest infestation would threaten adjacent resources.

Calving Habitat Strategy

(Maps will be provided of the following major calving areas: Park Ridge, Cook Ridge, Cape Horn Ridge, Cabin Ridge, Sheep Ridge, Bracken Ridge, Mud Springs, Pinkham, and other identified areas.)

- Management activities shall not occur during the calving period, May 1 through June 30.
- Developed recreation sites and ORV uses shall not be available during the calving season.
- Habitat in calving areas shall be managed to meet the requirements of intermediate winter range, unless a more restrictive strategy would apply; i e., old growth MMR, critical winter range, etc.

Roadless Areas Standards

- Wenaha-Tucannon Special Area shall be strategy A1 The Congress designated this area primarily to perpetuate the big game resource and provide for a quality hunting experience. Specifically, no ORV's shall be allowed.
- Burnt Fork shall be strategy F2.
- Wenatchee Creek, which includes a bighorn sheep lambing area, shall be strategy A1.
- Asotin Creek, also a traditional bighorn area and being considered as a reintroduction site, shall be management strategy A1.

Wild and Scenic Standards

Both the Tucannon and Touchet Rivers shall be afforded special consideration by the USFS so as not to preclude them from inclusion as state Scenic Rivers. This shall include restrictions of timber harvest and road construction within one-quarter mile of the river.

Riparian Habitat Strategy

(Use C5 as a base for all riparian habitat, except as provided below).

1. GOAL

Allow multiple-uses in riparian habitats, provided that values for water quality, fish, and wildlife are maintained or enhanced.

2. DESIRED RESULTS

- Provide for an amount and diversity of riparian vegetation that will maintain or increase water quality and the abundance and diversity of wildlife and fish resources.
- Eliminate disturbance to wildlife during critical periods.
- Complete the return of degraded habitat to good condition through mitigation projects during the first decade.
- Enhance fish and wildlife habitats through capital investment, where benefits can be clearly demonstrated.
- Provide for recreational and economic opportunities where objectives 1-3 can be met.

3. DESCRIPTION

The riparian management strategy shall apply to all Class I and II streams. It shall also apply to Class III streams and any other waters which contain fish, could directly influence and fish-bearing stream, or contain important wildlife resources (based on topography, slope, presence

N - 369

of diverse vegetation, or presence of an MIS or other sensitive wildlife species) The riparian management strategy shall be applied to the area proposed by Meehan et al, and Swanson et al, which includes the body of water and all vegetation directly influencing aquatic processes. At a minimum, this would extend from the ordinary high water mark a distance equal to the potential height of the tallest trees. Soils, vegetation and topography should then be used to modify zone width, where appropriate. For example, flood plains and associated wetlands shall be incorporated.

This riparian management strategy shall not supersede application of another management strategy which provides higher levels of protection, i e , critical winter range, MMR's, etc. This strategy may be modified where site-specific adjustments can be shown to maintain or enhance fish and wildlife resources, but in no case may be less than that adopted in the state Timber/Fish/Wildlife Agreement and the Forest Practices Rules.

4 RESOURCE PRIORITIES AND CONSTRAINTS

A Recreation

New developed sites shall not be constructed in riparian management areas.

Expansions of existing sites shall not occur within a riparian management zone.

Motorized recreation use shall not occur in riparian management areas except to access facilities or designated stream crossings.

Dispersed, non-motorized recreation may be encouraged.

B Visual

C. Cultural

D. Wildlife and Fish

Management within the riparian zone shall emphasize maintaining cover and vegetative diversity, stabilizing soils, and recruiting large organic debris and snags. Low management intensity is appropriate for riparian zones LOD should be retained at 750 pieces per mile where possible (Cederholm, unpublished). Large snags should be retained at the level needed to provide for 100 percent of the potential population of cavity excavator species Down wood for wildlife should be available at a minimum of 4 logs per acre, 20" at large end and 20' long, or the largest size available. Canopy closure should exceed 70 percent where available to provide thermal cover.

Impacted riparian management areas shall be returned to good condition prior to the continuation, or development of, activities with a potential to degrade habitat Enhancement projects shall be coordinated with the state and shall be able to demonstrate a link between improved habitat and increased wildlife or fish populations Non-structural habitat improvement projects should be given greater emphasis.

Management activities shall not create barriers that impede movement of wildlife or fish.

E Range

Livestock should be excluded from the wetted perimeter of water bodies.

Livestock use shall be reduced where damage has occurred until the condition improves to "good", structures necessary to prevent encroachment should be installed.

Available forage shall be allocated to meet the needs of wildlife.

Available forage, excess to wildlife needs and beyond that needed to improve range condition to "good" may be allocated to livestock after a CRMP effort has evaluated potential effects on resources and recommended such use, allotment by allotment.

All range and livestock practices may be used consistent with this strategy's goals.

F. Timber

Where cuts occur, selective harvest of intermediate-size trees 5" dbh to 18" dbh would be best for wildlife Clearcuts should be avoided, unless a site-specific justification of fish and wildlife benefit can be made. Clearcut units shall be limited to<5 acres. Under any cutting method, the rotation in big game winter range should be long to produce optimal thermal cover, with maximum harvest per decade covering no more than 5 percent of the zone in any one sub-watershed. A created opening exists until the new stand is≥6 1/2 feet.

Salvage sales shall not occur in riparian management areas. Thinning practices may occur consistent with maintaining thermal cover, snag habitat, and vegetative diversity (post-harvest stand must represent pre-harvest stand in percent by age class and tree species Brush reduction is not appropriate. Other cultural practices may occur where consistent with the strategy's objectives. Fuelwood cutting is not permitted.

G. Soil

Ground-disturbing activities (including road construction, timber harvest, site preparation, and livestock use) shall not occur on more than 10 percent of the area in any sub-watershed.

H. Water

Where site-specific adjustments will be made to the prescription, the recent state Timber/Fish/Wildlife Agreement shall be applied as an MMR. Best management practices shall continue to be applied interim to the development of a site-specific, measurable standards. Implementation of activities shall comply with the State Hydraulic Code.

I Minerals

Riparian management areas are considered for mineral development, the permit must be conditioned to maintain habitat which meets this strategy's goal

J Protection

Actively control wildfire in or adjacent to riparian management zones. Use biological control methods if pest management is necessary to protect resources

K Fuels

Broadcast burning is not appropriate. Hand pile slash where accumulations exceed 1 5 feet or where they would impede movement of wildlife.

L Transportation

New roads shall be placed 250 feet (horizontal) or more from streams or wetlands, except where necessary to cross a stream in order to reduce total road construction. They should be designed to facilitate closure. Crossings should occur at right angles. Fords shall not be used.

Existing roads within 250 feet shall be closed to motorized vehicle traffic except where necessary to meet an identified administrative need or to access a facility or developed recreation site.

Dispersed, non-motorized recreation may be encouraged on closed roads. Trails are permitted.

Screening vegetation buffer strips shall be retained along open roads where activities will occur.

M. Lands

Road Standards

- All roads available for motorized vehicle traffic shall be included in the calculation of "open road density," including but not limited to, system roads, non-system roads, pioneered roads, ridge-top roads.
- In order to be considered closed, a road must meet the definition supplied in "HEI Calculation" 2b, page 12.
- Roads shall be closed in the following management areas unless needed to access a facility, developed recreation site or trailhead, or to fulfill an identified administrative requirement Riparian Areas, Roadless Areas, Mature and Old Growth MMR Areas.
- The open road density shall not exceed
  a. 0 5 mile per square mile in each, geographically separate, critical winter range area,

  b. 1.5 mile per square mile in each, geographically separate, intermediate winter range area,
  c. 2 0 mile per square mile in other, geographically separate, management areas in which roading is appropriate.
- New road construction shall avoid areas described as sensitive by Thomas et al (1979) and Brown et al (1985), including natural openings and meadows, places with critical uses such as travel corridors and calving areas, caves and talus, raptor nesting areas, and others. Where roads occur, they should be screened by buffers of natural vegetation.

Snag Habitat Standards

Snag habitat shall be managed to meet the population levels identified below. Recruitment trees shall be retained to ensure the same levels will be available in the future.

Areas which are currently below identified levels due to previous management activities will be mitigated by one of the two methods below

  a. Create new snag habitat by mechanically or chemically killing green trees, or
  b. Manage surrounding habitat at a higher percent of potential population such that the average meets the standard below.

Strategy	Population Level	Strategy	Population Level
A1	100	C3	75
A2	100	C4	80
A3	60	C5	100
A4	80	C6	100
A5	60	C7	100
A6	--	C8	100
A7	80	D1	60
A8	80	D2	--
A9	100	F1	60
A10	100	F2	100
B1	100		
C1	100	F4	80

Old Growth and MMR Standards

To ensure the maintenance of old growth as an ecosystem well-distributed throughout the Forest in Washington, provide a minimum of 5 percent of the forested land base in the old growth condition in each sub-watershed. The old growth should represent, by proportion, the plant communities that naturally occur in the sub-watershed. Land management strategies that maintain the unmanaged old growth condition may be applied to this 5 percent when they occur in the sub-watershed.

N - 371

Lands allocated to meet the mature and old growth MMR's shall be dedicated to that purpose. No management activities shall occur except those judged necessary to bring sub-optimal habitat closer to the USFS Regional Guide definition. At least 30 percent more habitats should be allocated for each MMR species than the minimum level. The additional allocations shall be used to improve the distribution of MMR habitats and shall not overlap other, non-MMR, allocations in order to provide for catastrophic habitat losses and occupancy rates of less than 100 percent

6040J

MAPPING EFFORT TO IDENTIFY CRITICAL ELK WINTER RANGE ON THE UMATILLA NATIONAL FOREST IN WASHINGTON STATE. (Notes prepared by WDW, Curt Leigh, 1988)

On Thursday, December 17, 1987, Pat Fowler and Curt Leigh met with Forest Service Biologists, Rod Johnson and Fred Higgenbothum to jointly locate boundaries on elk winter range which would identify areas that are critical for winter elk use. We started the meeting with some backgrouind information for Fred's benefit and discussed the meeting that Ted Gruenwald and Curt Leigh attended in Spokane between Bruce Smith and Jim Lawrence. Rod had a letter directing him to help identify the critical area on the Lick Creek Winter Range. It was my understanding, from the meeting in Spokane, that we wanted to identify critical winter range areas on all five winter ranges on the Pomeroy Ranger District. We finally decided that it was reasonable to look at all five of the winter ranges while we were together.

We had some general concerns regarding the use and definitions of some common terms, like "maintain or improve" and "closed road." We agreed that our agencies don't agree on which management activities actually maintain elk winter range. To avoid that complication, we agreed that the management strategy for this "critical" elk winter range should specify, "timber management will only occur when it improves winter elk habitat." Other topics which we discussed without resolution were, roads, suboptimal thermal cover, and HEI modeling.

To actually draw lines designating the critical winter range, we tried to pick boundabries that were identifiable on the ground, and had meaning in terms of use by wintering elk. We used mylar overlays on USGS Quad maps to record the boundaries. The district kept one set of the mylar overlays and Curt Leigh has the other copy.

We started with the Lick Creek Winter Range. The line that we picked follows the existing winter range boundary starting at the east boundary of the forest on the South Fork Asotin and crosses Park Ridge, then goes around the Horak Ranch. The line goes down to the North Fork Asotin, following a ridge line almost due north of Round Prairie Spring. It goes up the North Fork Asotin, following a ridge line almost due north of Round Prairie Spring. It goes up the North Fort Asotin past Pinkham and turns north up a ridge line to Jump Off Joe Point. Then it follows the ridge line east to Bracken Springs where it turns northerly and crosses Lick Creek. Continuing in that direction, it connects with the winter range line on Charlie Creek, and back to the Forest Boundary.

The Tucannon winter range was a little more difficult because of the District's increased interest in timber production in the Tucannon Drainage. We finally decided to draw the line based on elk use and try to accommodate timber interests after the timber management folks had a chance to look at the line we were drawing. The line we selected starts on the northeast side of the winter ranges, on Ables Ridge, it crosses the Dry Fork of Cummins Creek near it's headwaters where the creek splits and crosses Cummings Creek near the existing mine. It then follows along the top of the ridge above Waterman, Big Four, and Grub Canyons. The critical winter range line goes down Hixon Canyon into the Tucannon Valley where it follows the forest boundary up the

Tucannon to the Little Tucannon where it turns north and follows a ridge line up to the breaks above School Canyon, to a line which we already accept as the winter range boundary The critical winter range boundary then follows the ridge line above School Canyon in a northerly direction out to the Forest Boundary, roughly parallel to the Maloney Mountain Road.

On the Jim Creek side we found very little area on the forest that qualified as critical winter range. The area we selected is in the headwaters of Jim Creek, south of Eckler Mountain.

There was very little discussion regarding the other two winter ranges on the Pomeroy District. We didn't discuss the Wenaha Winter Range because it is in a congressionally designated wilderness area and already has a specific, very restrictive, management strategy.

The Mountain View winter range was also very easy to cover. We agreed that the ridge line that makes up the existing GTM boundary for the Mallory Ridge-Wenatchee Canyon area would include the area we were calling critical winter elk range.

We are planning another meeting at an unspecified date, following review of the boundary we proposed by Pomeroy's timber staff.

ELK, DEER, AND BIGHORN SHEEP ESTIMATES. (Prepared 1983 per request of the Umatilla Forest.)

The procedure used to estimate the population of elk for the Blue Mountains was made from data on harvest and field observations.

Data:

(1) Pre-season herd composition - 25 male/100 female/48 calves
15% - 57% - 28%

(2) 1,057 bulls harvested. 690 anterless harvested.

(3) Bull mortality factor = yearling % of bulls in harvest X % of bulls legally harvested.

.81 = .85 x .95
Bull mortality factor = .81

(4) Crippling loss: Bulls = .05 Total animals = 157 elk
Anterless = .15

(5) Indian take = 300 elk

The following steps are used to find post-season populations

(1) $\frac{1057}{.81}$ = 1,305 pre-season bulls or $\frac{\text{Bulls Harvested}}{\text{Bulls Mort. Factor}}$ = Pre-season Bulls

(3) 8700 - 1747 - 157 = 6,796 post-season population of elk.
or pre-season population - total elk harvested (bull and antlerless) - crippling loss = post-season elk.

(4) 6796 - 300 = 6,496 winter population.
Post-season elk - Indian take = winter population.

The Department winter airplane counts, with an accuracy factor added in, on National Forest land was 3,354 elk sighted. The National Forest winter objective of the region is 3,815 elk. The two figures are within acceptable limits, if you consider the drop in the number of elk permits in the Lick Creek Unit in the upcoming season which should bring elk numbers up.

Overall, the whole population objective of the region is lower than the Stategic Plan and the 1980-81 Big Game Status Report. The Big Game Status REport is based on a 1,500 bull elk harvest, which gave us a 8,320 post-season population for the Blue Mountains, while the regional population objectives is based on a 1,100 bull elk harvest figure. The regional objective for post-season winter elk numbers if 6,500.

N - 374

Lick Creek is the only unit we are not at regional objective levels. We are asking, with the regional plan, for 1,100 elk on the winter range. Flight estimtes for this unit was 751 elk If you add the number of elk killed by Indians at 300, then your post-season winter population would be 1,051 elk. The deer population estimate was again put together with harvest data and field observations The following data were used

(1) Herd composition 34 male/100 female/51 fawns
18% - 54% - 28%

(2) Blue Mountains buck harvest = 2,892 Anteriess = 418

(3) Buck mortality factor = yearling % of buck harvested X number of bucks harvested from population legally.

.68 = .75 X .90
.68 = buck mortality factor

(4) 15% crippling loss = 497 deer

The following steps are used to find post-season populations.

(1) $\frac{2892}{68}$ = 4,253 pre-season bucks or $\frac{\text{buck harvest}}{\text{mortality facrot}}$ = pre-season bucks.

(2) $\frac{4253}{.18}$ = 23,628 pre-season deer pop. or $\frac{\text{Pre-season bucks}}{\text{\% of bucks in pop.}}$ = pre-season deer.

(3) 23,628 - 3,310 - 497 = 19,821 post-season deer population.
OR pre-season deer - legal harvest - crippling loss = post-season deer.
(buck & anterless)

On the National Forest we are asking for post-season populations of 7,740 deer The Strategic Plan asks for 7,414 deer, but doesn't address the Watershed.

The bighorn sheep population objectives is based on increasing the number of sheep as addressed in the Strategic Plan. This would also include a reintroduction of sheep into the North Fork of Asotin Creek. Total objective is 630 sheep in four management units. The 200 figure for Unit 169 is based on the Forest Service E.A. for the reintroduction in the Weneha. The E.A. picked Alternative D. It is estimated in 1988, that we have a minimum population of 250 bighorn sheep in the Blue Mountains of Washington.

ATTACHMENT C

PAGE-SPECIFIC TECHNICAL COMMENTS

PAGE SPECIFIC COMMENTS ON
THE UMATILLA NATIONAL FOREST PLAN

Proposed Management Plan

I-10 "Roadless areas can be developed to provide wood products, big game habitat, and roaded recreation " We disagree with the belief that roadless areas need to be roaded and managed in order to provide high quality big game habitat. That position ignores the critical nature of security areas Big game use in unroaded (undisturbed) habitat is always higher than in similar roaded habitat Building roads and harvesting timber in roadless areas will not provide both roaded recreation and big game habitat Roaded recreational opportunity can be increased by developing roadless areas, but the supply for roaded recreational opportunity already exceeds the demand (p III-56)

Preserving management options is a strong argument in support of resource planning Developing (roading) existing roadless areas will preclude future backcountry opportunities

II-40 Alternative F claims that "Big Game habitat management is designed to maintain or enhance populations." But, with alternative F, elk population numbers DROP more than 12 percent in the first five decades (p S-18)

II-104 All alternatives range between 46 and 61 percent of potential population levels for old growth indicator species Please clarify whether these figures equate "potential" with current habitat carrying capacity or with biological potential if all capable habitat were suitable Further, in terms of wildlife numbers, the planned reduction in wildlife will be greater than is presently estimated because the reductions are in all old growth dependant species, not just indicator species Additionally, your estimates are inflated due to the limits of your modelling capability, which does not allow for geographic specificity, fragmentation of habitats, distribution or sizes of habitats, or the lack of connecting corridors.

II-106 The management of thermal cover is another serious concern. Retaining satisfactory thermal cover, on the Forest, is the key to reducing elk migration off National Forest and onto agricultural lands yet alternatives F, Fd, A, H, and I will lose nearly 50 percent of the existing thermal cover between decades one and five

II-151 We are very concerned with the accuracy of the methods used to calculate sediment production Here is an example of the basis for our concern. "Timber harvest contributes about 1/2 of the sediment yield (p IV-13) and, "Roads contribute about 50 percent to the increase in sediment (p IV-15)."

Alternative F has an open road density that is 20 percent higher than alternative D (p II-44) In addition, "The riparian harvest proposed by alternative F is 80 percent higher than the riparian harvest proposed in alternative D However, the sediment yield for alternative F is only 3 percent higher than the yield from alternative D With a 20 percent increase in open road density and an 80 percent increase in riparian harvest, it is reasonable to expect more than a 3 percent increase in sediment production

III-32 The Forest recognizes that "in many areas the level and patterns of timber harvest may have reached, or even exceeded, the level at which elk habitat is improved and may presently be adversely affecting the habitat" yet, still assumes manipulation of cover and forage areas through timber management activities to be a form of nonstructural wildlife habitat improvement (p. III-31).

Many of the other habitat improvements proposed for big game seem more like range (livestock) improvements, i e., developing watering sites, planting palatable forage species, burning and fertilization.

III-33 Surveys indicate that increased livestock use on winter ranges will increase conflicts in some areas. "A 1980-81 winter range survey indicated that 71 percent of the surveyed area is in fair to good condition while 79 percent remains in poor to very poor condition." The plan does not identify the potential conflict locations, specific improvement goals, or the methods to prevent continued overuse of winter ranges.

III-48 The percents of forest roads stated to be open and closed differs from those presented on p. IV-107 and p. IV-120.

III-57 To resolve the supply and demand imbalance, the plan recommends some methods to that will not work, for example. "More hunting capacity can be created by developing more access and skewing opportunities toward the roaded modified end of the recreational opportunity spectrum " Increased access will decrease habitat effectiveness for big game, reduce the opportunity for a quality hunting experience, and increase the rate of harvest which will force a reduction in total hunting recreational opportunity.

III-58 "Resolving the hunting issues will take care of the majority of other dispersed recreational issues " Increasing road density (access) WILL NOT resolve the hunting or other non-motorized recreation issues. See comments p. III-57.

IV-13 "Water quality and timing of flows are not expected to be impacted by livestock grazing under any alternative." This statement conflicts with, "Logging and road building tend to intensify livestock use in the riparian area (p III-29).

N - 376

IV-13 Your statement that, "No change in water yield will occur as a result of timber harvesting," is in conflict with "Seasonal flow reductions following regeneration harvests have been reported for a number of sites along the eastern seaboard (p IV-15) "

A large number of studies exist which have data that contradict your assumptions, we suggest you re-evaluate.

IV-15 NEPA requires that all alternatives meet state water quality standards, yet alternatives A, C, E, I and J pose a substantial risk to the Forest's ability to do so.

IV-31 The HEI model assumes that forage is only produced on non-timbered sites, and timber harvest is required to create forage. However, you state that "80 percent of the forage on the forest is produced on timbered sites." In addition the forage that is created by harvest is often allocated to domestic livestock. "Transitory range contributes 60 percent of the livestock forage (p. S-2)."

IV-36 Road management and road closures are very critical to meeting wildlife habitat goals Roads physically remove productive acreage from the habitat base Research has also shown that the activity that is associated with roads further reduced available habitat for significant distances.

IV-54 "The presence and distribution of domestic livestock can affect the distribution of big game animals, and any substantial increases in domestic livestock numbers will probably either displace elk and deer or alter their distribution and use of the forest "

Disturbance and habitat alteration (loss) displaces wildlife. Displaced wildlife faces a competitive disadvantage. Adjacent habitat usually is occupied and moving wildlife is in greater danger of natural or man-induced predation Generally, activities that displace wildlife result in dead wildlife.

IV-55 "In all alternatives the assumption is made that potential big game populations are directly proportional to the Habitat Effectiveness Index " This assumption has no basis either in research or experience The HEI also does not indicate the most important factor in population management, that factor is herd productivity

IV-60 & 61 Figures IV-11 and IV-12 indicate that the MMR for thermal cover is not met with satisfactory thermal cover, in any alternative They also show that satisfactory thermal cover is lost during the first decade in every alternative.

IV-70 "In addition to the loss of thermal cover, concurrent timber sale activities will affect a larger portion of the Forest resulting in greater disturbance and/or displacement of deer and elk " See our comments page IV-54.

IV-71 See our comments, page IV-36

IV-71 "Estimated populations of indicator species will decline in every alternative." We do not believe the planned reduction in population levels of all indicator species, and the many other species that depend on the habitat types which the indicator species were selected to represent, is consistent with RPA, the Multiple Use Sustained Yield Act, and NFMA. Further, your Washington Office planning direction states that habitats for indicator species will be maintained or enhanced.

IV-71 "With the continuing combination of activities (timber sale preparation, harvest activities, slash disposal, planting and fuelwood cutting), many roads may well be open more than closed, and the result will be an ever increasing disturbance to wildlife.

Without specific efforts to establish and maintain road closures, predicted management intensity may eliminate the opportunity for wildlife-oriented recreation.

IV-73 "In some alternatives the implementation of Management Strategies C3 and C4 will not only effectively mitigate the effects of timber management activities, but also enhance habitat for deer and elk." As those strategies (C3 and C4) are currently written, we strongly disagree with that statement. The Forest's prediction of reductions in elk numbers over time in all alternatives (Table S-2, p. S-18) supports our position that those strategies, particularly C3, do not mitigate the impacts from timber management, or enhance elk populations.

IV-74 "The opportunity for improving the type and quality of wildlife-oriented recreation is very important to the state " Unfortunately, it is difficult to assess the impacts on recreation because of several conflicting findings in the document. For example:

The analysis predicts, "Alternatives D, G, and E increase big game user days by over 18 percent (p. IV-74)" and, "Alternatives A, B, H, and I could cause a decrease in hunting (p. IV-118)" and, "Alternatives H, I, and Fd will decrease recreational use of the Forest (p. IV-167)."

In spite of these findings, the document claims, "The potential elk population and amount of elk hunting change relatively little with any alternative (p. IV-118)" and, "None of the alternatives will alter traditional patterns of hunting during the next decade (p. IV-157) "

IV-83 The document states that, "Fish habitat improvements are designed to promote long-term bank stability and water quality improvement." This seems to be counter-productive in light of another statement on p IV-46, "Localized heavy livestock use in the riparian areas can be expected from fish habitat enhancement projects " Structural improvements (fences) in the riparian zone may also be necessary to improve bank stability and protect investments in fish habitat structures

We are very concerned about the reliance placed on habitat improvements to mitigate the impacts on wildlife habitat resulting from forest management, especially fish habitat If funding of habitat improvements in unavailable, there is a potential for unmitigated loss of fish and wildlife resources. We suggest the Forest develop contingency plans to guarantee against unmitigated losses of wildlife if enhancement funding is unavailable It is the State's position that the best and most effective mitigation is action that avoids or prevents the impact

IV-112 "To compensate for a drop in HEI, local roads are closed to adjust the HEI to the desired level."

The definition of a closed road has been a persistent problem. The concept of road closures improving habitat is the basis for maintaining HEI values when thermal cover is harvested. When a road closure allows thermal cover removal, and for some reason vehicles still use the road, then the closure is only mitigation on paper.

A method suggested by Oregon is simple and understandable. In order to count as a closed road, the road MUST have a physical, maintained barrier, AND less than one vehicle trip per week during the normal operating season. Often, sale activities including harvest, sale prep , and post-sale cleanup will involve the roads which were counted as closed in the HEI evaluation. In that situation, an equal amount of existing road mileage must be closed until the required barrier is in place and usage levels drop to within specified limits

IV-145 Alternative J may not be a viable alternative. The congressional order that created the Wenaha-Tucannon Special Area clearly indicated that the areas were to be managed to emphasize hunting, not timber and range as proposed.

IV-173 According to the draft EIS, "Only alternatives E and G will maintain or enhance the current level of elk habitat through the 5th decade " Isn't this a Plan requirement?

2-5 See comments page 2-11

2-11 There are some demands that will not be met in <u>any</u> alternative· "Big game hunting demand will always exceed the maximum supply over the RPA planning period (p 2-11)." "Demand for big game hunting will increase through the next decade at a rate of 1 to 2 percent per year (p. III-32) " "Demand for hunting recreation will increase 27 percent by 2030 (p. III-55)."

Yet we find that there are some demands that are met in <u>every</u> alternative, for example: "All alternatives meet the historic demand for timber (p IV-34)" and, "The red meat processing sectors will enjoy positive changes in income for all alternatives (p. IV-168)" and, "each alternative will create an increase, on the average, in payments made to the ten counties (p. IV-168)" and, "The recreational opportunity supplied in the roaded natural and roaded modified setting more than doubles the acreage necessary to meet user demand (p. III-56) "

We question whether the range of alternatives is broad enough in light of the fact that planning direction requires that state species goals be met in one or more alternatives, and that indicator species be maintained or increased.

2-14 189 million pounds of forage is 84 percent of 225 million pounds, not 36 percent.

The analysis of forage production does not agree with the projected resource outputs listed in Table A-7 on p 4-15. That table predicts the annual production of 203 million lbs. of available forage. The estimates of forage production are critical for every alternative because, "In terms of forage production, the high and low forage production alternatives are within 11 percent of each other Ip. IV-35."

3-3 Livestock influences need to be measured as an "indicator of responsiveness" especially in the riparian and big game issues A better solution is to elevate <u>range</u> to the level of a major issue

3-8 Paragraph 4 Enhancement of riparian areas by fish improvement projects may do something for the fish, but may severely impact native ecosystems. Protection and enhancement of the native plant communities should be a priority in any riparian enhancement project.

4-1 Forest Management Goals 5 and 7 are good. Maintenance of native plant communities should be added to Goal 7. How is proper diversity and balance defined?

4-4 If alternative F is implemented as proposed, within 10 years, only "4 percent of the Forest, outside wilderness will remain in old growth" and, "60 percent of the Forest soils will be disturbed during the first decade (p 4-7)" but, most damaging to fish and wildlife resources "About 110 miles of road construction per year will occur during the first decade (p. 4-8) "

If this alternative is allowed to continue for 50 years, "Primitive and semi primitive recreational areas will be noticeably crowded (p 4-10)" and, "Direct control to limit the number of visitors during the hunting season will be necessary (p 4-10)."

Alternative F does not provide for a balance of multiple uses to meet demands Therefore, we question that it meets the law which requires that Forests be managed to maximize net public benefits

4-6 We hope the 50 percent of the forest surveyed for endangered, threatened and sensitive plants is in the areas where the most manipulative management activities are occurring We suggest that management guides for sensitive plant species be prepared to help guide the land managers during the next ten years.

4-17 Under alternative F, "about 75 percent of the non-wilderness, unroaded lands will be available for semi-primitive motorized recreation " Besides wilderness, the only allocations that prohibit ORV use completely are Research Natural Areas and the Hill Creek Watershed

4-23 "Before a project is initiated, inventories for population and distribution of threatened, endangered and sensitive species will be conducted on a priority basis." This sounds like lists will be generated, but not much else will be done What will be the management response to the surveys? Also, who will determine the priority of areas for inventory?

We support the designation of Hill Creek RNA, as well as, Elk Flats and Elk Flats-Wenaha Breaks RNAs

Table 4-7. Pataha RNA lists bluebunch wheatgrass -- Sandbert's bluegrass -- as the filled cell. Our data base and plan lists the filled cell for this RNA as Idaho fescue -- bluebunch wheatgrass We believe that our data is correct, but this should be checked with the RNA Scientist.

Another possible discrepancy in forage allocation for alternative F is found in the resource summary section of the forest management objectives. That section concludes, "livestock grazing is permitted on about 76 percent of the forest using intensive to extensive management, 19 percent will receive no grazing and 5 percent will receive minimum grazing " How does that allocation respond to the AMS finding that only 31 percent of the forage-producing area is suitable for allocation to livestock?

4-25 It would be useful if the areas in Table 4-8 (Proposed Botanical Areas) were identified in the Plan as to location, at least in a general way, such as state and maybe ranger district

We do not see the value of the bottom half of Table 4-9 (Problem Plants) Most of the plants referred to here are native Many are only a problem when range land is severely overgrazed Additionally, the list would include some plants which are quite rare, e.g., "lupine" would include Lupinus cusickii and Lupinus sabinii.

4-33 The goal for the water resource section is to, "maintain or enhance water quality " The resource summary section predicts that under alternative F, "sediment production will be about 15 percent above background levels," producing over 32 thousand tons of sediment per year during the first decade (p 3-3) " How does that meet the goal?

There should also be some recognition of the Memorandum of Understanding (MOU) with the State of Washington regarding activities in fish-bearing waters. In that MOU, the Forest Service has agreed to comply with the State Hydraulics Code

4-39 There seems to be a disagreement between guidelines number 15 and number 22 Number 15, "limits motorized vehicles to roads, trails, and areas designated open in the Umatilla National Forest Travel Plan," and number 22 proposes to "use ORV closures only where needed to minimize disturbance to wildlife, provide a range of recreation opportunities, or to protect the soil and water resources." We would like to review a copy of the Travel Plan

4-42 Guideline number 3 proposes to "maintain primary cavity excavators at twenty percent of their potential population throughout the Forest " It also makes reference to Thomas and others 1979 That reference (p. 74) indicates that 20 percent potential population is below the level referred to as viable; it puts 20 percent at the lower end of the range called marginal.

The definition of thermal cover in the winter range guideline (number 9) is not accepted by the State as thermal cover. An acceptable definition of thermal cover protection is included in the F7 management strategy and identified in a later section that addresses important management strategies.

Item number 6. The introduction of non-native wildlife should be avoided.

4-55 Item number 10 in this section proposes to, "Close and obliterate all roads not in the Forest Development System or authorized by permit, lease, or easement." We strongly support that position Can we expect this to apply to ridge-top roads, pioneered roads and unconstructed roads in "roadless" areas?

4-58 It is not clear to us whether the Standards and Guidelines for T, E & S species meet regional policy S & G #2 discusses "T/E" species, but the only mention of sensitive species has to do with collection permits and maintaining contacts with other appropriate agencies, e.g , WNHP

4-63 & 67 A2 This is a semi-primitive, motorized strategy Where this strategy overlaps big game winter range, it should contain a seasonal restriction prohibiting vehicular traffic during the winter use period

A3 and A4 These are viewshed strategies. They do not contain language to protect thermal cover for big game even though A3 is proposed on identified elk winter range in Washington We recommend that they not be used on big game winter range

It also seems unusual that viewshed strategies would include the following visual management objective under their timber constraints. "#1 Timber stands which have remained unmanaged in the past because of their visual sensitivity, will begin receiving treatment "

4-77 Transportation, Item #3. Stronger language is needed to protect the values targeted by the Special Interest Area designation We suggest that only be inserted:
" maintained only to meet the objective of the . "

Range Grazing may not be compatible with maintaining the botanical resources for which the Botanical Interest Areas have been identified This should be stated.

4-78 Pests Hazard trees are often major habitat for nongame species, as well as, playing a part in nutrient cycling Therefore, hazard tree removal should be permitted only when danger can be demonstrated

4-79 A10 These special management areas were created by a Conference Report of the 95th Congress This management strategy is not applied to the Congressionally-created Upper Tucannon Special Area in the Forest's preferred alternative The strategy says "ORV use is not permitted " Currently that restriction is not in place nor will it be in Alternative F. Does that meet the intent of the Conference Report?

C-3 The Department of Wildlife prepared a substitute winter range strategy during earlier negotiations with the Forest. A copy of this substitute strategy is attached to this response We have also cooperated with USFS biologists to identify critical winter range in Washington that needs special consideration Those critical winter range areas are located in the Asotin Creek-Lick Creek drainages, the Tucannon River-Cummins Creek drainage, the Jim Creek drainage and the Wenatchee Creek-Mallory Mountain area

The areas that have been identified as critical winter ranges, are also identified as potential Grass Timber Mosaic (GTM) acres in the GTM map supplied by the Forest Both of these efforts are in response to our previous dissatisfaction with existing wither range management

E1 We could not support the use of this designation in Washington

4-84 Local ranchers have traditionally used the wilderness to graze their herds, however it is not a natural part of the wilderness Its removal from the wilderness areas would allow ecosystems unaffected by human manipulation to reestablish (p 4-82) We suggest that as allotments expire or a transfer is requested the Forest not renew them and thereby slowly let the wilderness go wild

4-93 & 103 To be acceptable, the section under the wildlife heading dealing with thermal cover should retain the first paragraph with the exception of changing "percent potential habitat effectiveness" to "HEI". In addition, the second paragraph containing the definition of thermal cover, in both C3 and C8, be changed to read as follows: "Where possible, a minimum of 15 percent of the winter range will be managed as thermal cover If this is not attainable because of low natural potential, the highest percentage thermal cover possible will be created or maintained. Stands managed for thermal cover will be at least 40 feet in height and a minimum of 1200 feet wide Stands less than the minimum width will remain unmanaged The canopy closure should be 70 percent in the mixed conifer/lodgepole pine types and 50 percent canopy closure in the Ponderosa pine type. Hiding cover areas will be 1200 to 1800 feet wide Cover areas will be managed to provide sufficient vegetation to obscure 90 percent of a standing elk at a distance of 200 feet or less Management in cover areas will result in a multi-layered timber stand."

4-105 Range. Grazing should not be allowed in RNAs unless it can be demonstrated that grazing is necessary to maintain the cells targeted in the RNA. There are no cells identified where it has been established that grazing is necessary for their maintenance. Grazing should be eliminated from all the RNAs.

4-114 "During closure periods, measures shall be taken to ensure that motorized vehicles cannot enter onto or travel upon closed roads."

5-7 Statement implies that the states will be monitoring impacts to old growth dependant species. That information is not collected under existing management nor is a budget available to collect that data. Unless the Forest is prepared to fund this additional data collection, the monitoring plan should be altered

B-15 & 16 Coefficient derivations are not explained in detail that will allow the reader to evaluate either the process or assumptions made

B-16 We believe a constraint needs to be applied that will assure the right number, sizes and distribution of snags is implementable This would also more accurately reflect ASQ and receipts We suggest this be done according to a method standardized among Forests

B-19 Since geographic specificity is available at the sub-watershed basis, we would like to see fish and wildlife habitat and population estimates displayed at that level.

B-29 Timber yields in riparian areas We are concerned that the assumptions used to calculate yields (or falldown) do not match those used to describe the various management strategies (p B-24) If the strategies are followed, then ASQ and receipts will be inflated over actual

Timber yields for wildlife We cannot understand your explanation regarding not developing yield tables for snags and green recruitment trees. Please provide the inventory data which shows that the needed number, sizes, and distribution of snags and down wood exist and can be maintained Why were no other yield tables (existing) developed for wildlife or fish? This makes it difficult to compare alternatives to present conditions.

Draft Environmental Impact Statement

S-1 Paragraph 6 and S-3 chart: Different figures are given for number of acres of land suitable for timber production (807,233 vs 897,200 acres).

S-3 Number of MMBF/yr harvested is greater than number of MMBF/yr allowed It is not clear why this is so

S-7 Riparian Areas Paragraph 4. This paragraph seems to indicate that the only issues which will be addressed in determining management of riparian zones are anadromous fish production and timber harvest. Is that the case?

S-16 C1 (Dedicated Old Growth) is a misleading category. The name suggests old growth set aside, but in fact timber harvesting is allowed

S-17 C4 (Wildlife Habitat) is a misleading category. The name suggests that all wildlife species will be managed for. In fact, only those species which can tolerate manipulation of their habitat (timber production, harvest and roads) will benefit Species which require undisturbed habitat, particularly large areas of said, are not included

C6 (Riparian and Fish) should also include protection and possibly reestablishment or enhancement of native riparian plant communities.

C8 (Grass-Tree Mosaic) should also include concern for maintaining viable native ecosystems, including native plant communities.

D1 (Range) should include maintaining viable native ecosystems, including native plant communities

S-20 Economic efficiency is indicated as being very important in the planning documents. What happens, however, is that net public benefit is stated as the decision criterion In Table S-3 Alternative F has a "present net value" of $1,320 46 million dollars The present net value for the timber portion is $499 79 million dollars. The present net worth for recreation, however, is $956 96 million dollars. It is difficult to believe that recreation is going to have a net worth nearly twice that of timber and we would like to have some clarification on this point.

The demand function for commodities is assumed to be horizontal (perfectly elastic). The problem with this is that the same market price is assumed for a given time period no matter what the volume for sale. This is too simplistic an assumption Over time, however, the price of timber is projected to increase at one percent per year which means that timber really is a scarce resource The logic is not consistent.

I-10 The group that decided on the major issues and concerns decided that range is a secondary issue in planning. Range is given much play in the document, but by recognizing it as a secondary issue the importance and degree of impact that livestock use has on native ecosystems is lowered

I-15 Indicators of response in riparian area need to include a direct measure of the impact of livestock to fish, wildlife and to the riparian environment itself. Throughout the document livestock and riparian interactions are explained or alluded to. A measure in tables would help in that analysis.

I-21 Range paragraph 3, sentence 4: A documented rationale is needed to support the following statement: "Ranchers indicate that if elk populations are increased on the Forest, the reduction in livestock numbers,.. " could affect viability of ranching operations." If this user group is given such weight in decision-making, other users need to have equal say in determining impacts of specific land-uses.

III-9 The preferred alternative will increase AUMs on the Forest. This seems premature since "Grasslands generally are on an upward trend in eco-stage." Recovery of the forage base ought to be a priority since it was stated throughout the document that the Forest was overgrazed 80 years ago and is now recovering.

III-12 See our comments on the Plan, page 4-25 above, for similar comments on the on the bottom half of Table III-6.

III-34 The section on riparian systems is inadequate. What is meant by "Most of the riparian area on the Forest is generally in good condition"? What is the composition of the native riparian plant communities? What are the effects of gold dredging, grazing, and road building, and how much of the riparian area is effected?

IV-5 Range Administration and Livestock Grazing This section minimizes the effects of livestock on soils, particularly riparian and wetland soils Livestock destroy wetland soil structure and break-down stream banks. These effects lead to increased erosion, disturbance of the native vegetation, and decreased water quality.

IV-12 Range Administration and Livestock Grazing. Livestock use of riparian areas, lakes and streams also can increase nutrient levels in the aquatic system which in turn can alter species composition and food webs

IV-46 Range improvements that use seedings should state that native species will be used in preference to alien plants that could alter composition or displace natural communities Guidelines addressing the use of fencing to enhance riparian areas should include language to ensure fences are far enough from the riparian zone to prevent negative impacts.

IV-50 Cumulative Effects, paragraph 1. Just like livestock, range managers seem "to develop regimented patterns." Why is it stated that the "Distribution of (livestock) use will not be changed (in wilderness)..."? This shows a lack of flexibility and a recognition that livestock production could be eliminated from parts of the National Forest and still serve the national interest.

IV-52 The idea that range has no indirect effects seems far-fetched For example, page IV-118 addresses some indirect effects of livestock on recreational use. In an otherwise good discussion of range issues, the omission of this section is disappointing.

Appendices

A-H The maps that pinpoint the location of the various RNAs may draw more attention to them

A-L This appendix provides a list of sensitive species with documented occurrences on the Forest. We do not think that the "Range" column is appropriate or necessary. Some of these plants are rare enough that publication of location information may represent a threat to their existence In general, the location information provided in this appendix is not specific enough to allow an individual to pinpoint where the species occurs However, in some cases, a knowledgeable person could locate them We suggest that the range information be made more general, such as identifying the ranger district.

ATTACHMENT D

TIMBER HARVEST DATA

N - 382

UMATILLA NATIONAL FOREST

David N Larsen
Natural Resource Economist
Analysis and Planning EM-11
Olympia WA 98504
(206) 586-4439
SCAN 321-4439

Natural Resource

ATTACHMENT A

March 23, 1988

TIMBER HARVEST BY COUNTY AND OWNER CLASS
(Million board feet, Scribner log rule)

COUNTY	OWNER CLASS						
	PRIVATE	STATE	UMATILLA NATIONAL FOREST			OTHER PUBLIC	TOTAL
			AMOUNT	% FOREST	% TOTAL		
1984							
Asotin	1	—	7	41	88	—	8
Columbia	10	1	10	59	48	—	21
Garfield	1	—	—	—	—	—	1
Walla Walla	<1	—	—	—	—	—	<1
Total	12	1	17	100	57	—	30
% of total	40	3	57			—	100
1983							
Asotin	1	—	1	25	50	—	2
Columbia	4	1	3	75	38	—	8
Garfield	3	—	—	—	—	—	3
Walla Walla	1	—	—	—	—	—	1
Total	9	1	4	100	29	—	14
% of total	64	7	29			—	100
1982							
Asotin	1	—	2	25	67	—	3
Columbia	4	1	1	50	17	—	6
Garfield	2	—	1	25	33	—	3
Walla Walla	—	—	—	—	—	—	—
Total	7	1	4	100	33	—	12
% of total	59	8	33			—	100

David Larsen
Analysis and Planning EM-11
Department of Natural Resources

SOURCE Washington Timber Harvest Reports, 1975-1984.

TIMBER HARVEST BY COUNTY AND OWNER CLASS
(Million board feet, Scribner log rule)

COUNTY	OWNER CLASS						
	PRIVATE	STATE	UMATILLA NATIONAL FOREST			OTHER PUBLIC	TOTAL
			AMOUNT	% FOREST	% TOTAL		
1981							
Asotin	1	1	14	93	88	—	16
Columbia	3	—	1	7	25	—	4
Garfield	1	—	—	—	—	—	1
Walla Walla	<1	<1	—	—	—	—	<1
Total	5	1	15	100	71	—	21
% of total	24	5	71			—	100
1980							
Asotin	2	<1	8	42	80	—	10
Columbia	6	—	2	11	25	—	8
Garfield	2	—	9	47	82	—	11
Walla Walla	1	—	—	—	—	—	1
Total	11	<1	19	100	63	—	30
% of total	37	—	63			—	100
1979							
Asotin	4	<1	13	76	76	—	17
Columbia	10	—	4	50	29	—	14
Garfield	2	—	—	—	—	—	2
Walla Walla	1	—	—	—	—	—	1
Total	17	<1	17	100	50	—	34
% of total	50	—	50			—	100
1978							
Asotin	5	<1	7	32	58	—	12
Columbia	6	2	4	18	33	—	12
Garfield	3	—	11	50	79	—	14
Walla Walla	1	—	—	—	—	—	1
Total	15	2	22	100	56	—	39
% of total	39	5	56			—	100

TIMBER HARVEST BY COUNTY AND OWNER CLASS
(Million board feet, Scribner log rule)

COUNTY	OWNER CLASS						
	PRIVATE	STATE	UMATILLA NATIONAL FOREST			OTHER PUBLIC	TOTAL
			AMOUNT	% FOREST	% TOTAL		
1977							
Asotin	5	<1	12	48	71	—	17
Columbia	4	1	<1	—	—	—	5
Garfield	2	—	13	52	87	—	15
Walla Walla	1	—	—	—	—	—	1
Total	12	1	25	100	66	—	38
% of total	31	3	66			—	100
1976							
Asotin	9	<1	4	17	31	—	13
Columbia	3	2	9	39	64	—	14
Garfield	4	—	10	44	71	—	14
Walla Walla	<1	—	—	—	—	—	<1
Total	16	2	23	100	56	—	41
% of total	39	5	40			—	100
1975							
Asotin	9	2	7	30	39	—	18
Columbia	3	1	8	35	67	—	12
Garfield	2	—	8	35	80	—	10
Walla Walla	1	—	—	—	—	—	1
Total	15	3	23	100	56	—	41
% of total	37	7	56			—	100
1975-1984 (10 year summary)							
Total	119	12	169	—	—	—	300
% of total	40	4	56	—	—	—	100

Attachment B

May 8, 1987

LOG CONSUMPTION FROM WASHINGTON NATIONAL FORESTS
(Thousand board feet, Scribner log scale)

	All National Forests	Umatilla National Forest	
		Volume	Percent
Economic area			
Puget Sound	267,014	—	—
Olympic Peninsula	324,716	—	—
Lower Columbia	194,895	—	—
Central Washington	146,569	—	—
Inland Empire	122,914	16,455	100
Total	1,056,108	16,455	100
Industry			
Lumber	777,960	16,455	100
Veneer & plywood	163,935	—	—
Pulp	83,041	—	—
Shake & shingle	29,852	—	—
Export	173	—	—
Post, pole & piling	1,147	—	—
Total	1,056,108	16,455	100

SOURCE 1984 Washington Mill Survey, Table 5.

David Larsen
Analysis and Planning EM-11
Department of Natural Resources

Attachment C

May 8, 1987

CONSUMPTION OF 1984 TIMBER HARVEST
FROM THE WENATCHE NATIONAL FOREST, BY COUNTY
(Million board feet, Scribner log rule)

Economic area and counties	Volume	
Inland Empire	Mbf	Percent
Asotin	6,473	39.3
Walla Walla	9,982	60 7
---	---	---
Area total	16,455	100 0

SOURCE 1984 Washington Mill Survey

Davi
Analysis and Planning
Department of Natural R

Attachment D

March 24 1988

LOG CONSUMPTION BY COUNTY AND HARVEST ORIGIN BY COUNTY
(Thousand board feet, Scribner log rule)

Economic area and county of use	Total	Four Inland Empire Counties				
		Total	Asotin	Columbia	Garfield	Walla Walla
Inland Empire						
Asotin/Walla Walla	54,867	18,450	6,484	2,604	6 564	2 598
Columbia/Ferry	47,631	200	--	200	--	--
Pend Oreille	24,000	--	--	--	--	--
Spokane	30 132	--	--	--	--	--
Stevens	223,317	--	--	--	--	--
Total	379,947	18,650	6,484	3,004	6,564	2,598
Total Washington State (0 3 % of the Washington harvest is from the four counties where the Umatilla National Forest is located)						
Total	5 768,037	18,450	6,404	3,004	6,564	2,598

1984 Washington Mill Survey, Table 4

David Larsen
Analysis and Planning EM-11
Department of Natural Resources

N - 386

Department of Energy
Bonneville Power Administration
PO Box 3621
Portland Oregon 97208 3621

MAR 29 1988

7009
RECEIVED
MAR 30 1988
FOREST SERVICE
UMATILLA NATIONAL FOREST

AJ

James A. Lawrence, Forest Supervisor
Umatilla National Forest
2517 SW. Hailey Avenue
Pendleton, OR 97801

Dear Mr Lawrence

Bonneville Power Administration (BPA) has reviewed the draft Environmental Impact Statement (draft EIS) and the Umatilla National Forest's proposed Land and Resource Management Plan (Plan).

BPA currently funds or plans to fund a number of anadromous fish habitat enhancement projects in the Umatilla or John Day River Basins and although BPA does not have any transmission facilities located within the Umatilla National Forest, we are still very interested in corridor planning. Therefore, our comments include both corridor concerns and fish and wildlife habitat enhancement concerns.

Corridor Concerns

Both the draft EIS and the draft Plan address corridors. Although the coverage seems to be complete, there are several areas which need to be clarified in the final documents.

1. The draft EIS mentions three classes of corridors which affect the Umatilla National Forest (1) existing utility transportation corridors, (2) utility only corridors, and (3) proposed utility transportation corridors. It is unclear whether or not corridor management areas have been established for these corridors. Such management area designations would be consistent with the treatment of corridors by other forests.

2. Corridor standards for management areas should be more explicit in identifying corridor avoidance or exclusion areas. It would also be helpful if the utility and utility transportation corridors mentioned on page III-49 of the draft EIS were clearly illustrated on a map.

3. The 1980 Western Regional Corridor Study (revised 1986) should be referenced for information on corridors. This corridor study was prepared by the Western Utility Group, an ad hoc group of Western Utilities. The study consolidates utility corridor needs in the Western United States. Another

source of corridor information is the BPA/FS 1977 Pacific Northwest East-West Corridor Study. It identified the Grand Ronde Corridor (A-1) which appears to be the same as PP&L's proposed corridor 2 on page III-49 of the draft EIS. The Grande Ronde Corridor is also identified as a planned corridor in the Western Regional Corridor Study.

Fish and Wildlife Habitat Enhancement Concerns

BPA is currently funding or plans to fund a number of anadromous fish habitat enhancement projects on the Umatilla National Forest within the Umatilla and John Day River Basins including:

Thomas Creek
North Fork, Middle Fork, South Fork, and Mainstem Umatilla River
Upper Meacham Creek and Lower Meacham Creek tributaries
Wilson River
Big Wall Creek and Little Wall Creek and tributaries
Camas Creek and tributaries
Potamus Creek and tributaries
Desolation Creek and tributaries
Granite Creek and tributaries
Meadowbrook Creek and tributaries

BPA also plans to fund other fish habitat enhancement projects on privately owned and tribal lands downstream from Umatilla National Forest land including:

Meacham Creek drainage
Upper Umatilla River drainages
Middle Fork and Mainstem John Day and Umatilla River drainages

These projects are described in the

Umatilla Drainage Fish Habitat Improvement Implementation Plan (in preparation), developed jointly by the Oregon Department of Fish and Wildlife, Confederated Tribes of Umatilla Indian Reservation, and the Umatilla National Forest;

North Fork John Day River and Tributaries Fish Habitat Improvement Implementation Plan, developed by the Umatilla National Forest, and John Day River Fish Habitat Improvement Implementation Plan, prepared by the Oregon Department of Fish and Wildlife.

The projects will implement part of measure 703(c) and Action Item 4.2 of the 1987 Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program, developed in response to the Pacific Northwest Electric Power Planning and Conservation Act of 1980. These projects represent a total expenditure of approximately $5.4 million through Fiscal Year 1992.

In the future, BPA may fund other projects in the Tucannon River, Walla Walla River, and Touchet River drainages if the projects are consistent with system and subbasin plans and are approved by the Northwest Power Planning Council.

Thank you for the opportunity to review the *draft EIS and the Land Resource* and Management Plan. If you have any questions or need further information, please call me at 503-230-5136 (FTS 429-5136).

Sincerely,

Anthony R. Morrell
Assistant to the Administrator
for Environment

cc
John Cheek, PP&L Portland
R. Sipe - USFS, Region 6

Our specific comments follow.

1 *Current projects* on the Umatilla National Forest include adding fish screens at various diversion dams on the Umatilla, fish ladders at Three Mile Dam, two acclimation facilities, and a hatchery near the existing Irrigon Hatchery to release fish throughout the Umatilla Basin. These *projects* represent funding and coordination between BPA and other Federal, State, and local agencies. BPA urges the Forest to consider these various projects in selecting and implementing the alternative for the Land and Resource Management Plan.

2. The Columbia River Basin Fish and Wildlife Program calls for development of a subbasin plan on the Umatilla and John Day Rivers. This subbasin plan will evaluate *future actions to increase* salmon and/or steelhead production in both the Umatilla and John Day River basins, all or a *portion of* which are within the Umatilla National Forest. These activities will need to be taken into consideration also.

3. BPA encourages protection of the entire watershed by giving special attention to riparian and adjacent terrestrial areas where logging, grazing, and road building activities may take place. *These activities* may increase water temperatures and sediment loading and reduce summer streamflow, with a subsequent reduction in fish production in *the affected* streams. Logging and grazing in riparian zones may also have an adverse impact on fish production by reducing *shade, streambank* stability, and input of woody debris to the streams. Any further reduction in fish production in *the watersheds of* completed, ongoing, or proposed project sites would be counterproductive to BPA's anadromous fish enhancement efforts. The Umatilla Forest should consider BPA's fish habitat enhancement projects when selecting an alternative and when implementing the selected *alternative.*

4. BPA encourages the Forest Service to recognize the future potential for fish and wildlife production enhancement projects on *these rivers* within the Forest in their current planning process, to protect existing fish habitat, and to not take *actions which could* preclude or increase the cost of future improvements for fish production in these rivers.

5. All riparian area should be classified under the C7 management area classification. *These areas should* be totally protected and no timber harvest allowed.

6. There is no C6 management area classification in the preferred alternative. This classification allows for enhancement of stream shading and production of anadromous fish and should be included in *the Plan.*

N - 388

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT CORPS OF ENGINEERS
WALLA WALLA WASHINGTON 99362 0265

March 30, 1988

REPLY TO ATTENTION OF

Planning Division

7132
RECEIVED
APR - 4 1988
FOREST SERVICE
UMATILLA NATIONAL FOREST

Mr. James Lawrence, Forest Supervisor
Umatilla National Forest
2517 S W Hailey Avenue
Pendleton, Oregon 97801

Dear Mr Lawrence

This is in response to your letter of November 16, 1988 concerning the Draft Environmental Impact Statement and proposed Land and Resource Management Plan for the Umatilla National Forest. We appreciate the opportunity to review and comment on the DEIS and Forest Plan

We have reviewed the Forest Plan for effects on hydropower, navigation, flood control, and our regulatory programs. We find that the Forest Plan would not significantly affect hydropower development. We note that Corps of Engineers Clean Water Act Section 404 permits for fill work in streams may be required. For additional information on permits in Washington please contact:

Regulatory Branch
Seattle District Corps of Engineers
Post Office Box C-3755
Seattle, Washington 98124-2255
Telephone (206) 764-3495

For additional information on permits in Oregon please contact:

Regulatory Branch
Portland District Corps of Engineers
Post Office Box 2946
Portland, Oregon 97208-2946
Telephone (503) 221-6995

We are concerned that there may be some impact on navigation from increased river siltation because of logging activity on the Forest. Logging methods which remove the protective vegetative cover (i.e. clearcutting) and the associated logging roads expose the soil to wind and water and allow increased runoff and erosion. The sediment transported by this runoff is eventually deposited in the Corps-operated reservoirs on the Snake and Columbia Rivers. We encourage the selection of an alternative and mitigation measures which will minimize sediment yield on the Forest

We are concerned that logging activity in the Mill Creek canyon may have a negative impact on the Corps' Mill Creek Flood Control Project Logging in the watershed will probably increase flows and sediment transport in Mill Creek This would increase sedimentation behind our diversion dam at Rooks Park and it would also require the Corps to divert water to Mill Creek Lake on a more frequent basis Because the dam on Mill Creek Lake has an undetermined amount of internal erosion, the Corps has decided ot to divert water into the lake after spring 1988 except for flood control purposes Until repairs are implemented, use of the lake for water storage will cause further deterioration of the dam and lessen the ability of the project to provide flood control for the city of Walla Walla. Thus, we are concerned about any action which may necessitate the use of Mill Creek Lake for flood control on a more frequent basis

We are concerned about the possible effects of forest management on the Corps' Lower Snake River Fish and Wildlife Compensation Plan (Compensation Plan). The Compensation Plan provides mitigation for the loss of anadromous fish caused by the four lower Snake River lock and dam projects Under the Compensation Plan steelhead and salmon smolts are being released in the Walla Walla River, the Touchet River, the Tucannon River, the Grande Ronde River, and Asotin Creek. We are concerned that logging practices and livestock grazing planned for these drainages may cause increased sedimentation and runoff which would degrade fish habitat and negatively impact the success of the Compensation Plan.

We are also concerned about the effects of upstream logging on two fish hatcheries, the Tucannon Hatchery in Washington and the Lookingglass Hatchery in Oregon, which are part of the Compensation Plan. Both of these hatcheries depend upon clear, cold water from the Forest. We are concerned that logging in the respective drainages, in particular the Upper Tucannon and Lookingglass roadless areas, will cause increased siltation and water temperatures. The Tucannon Hatchery already has a problem with water temperatures exceeding allowable temperatures during the summer. We are also concerned that increased logging in the Tucannon drainage may increase flows during the runoff period. The fish barrier at the Tucannon Hatchery experiences difficulty with operation and damage at peak flows now, thus we are concerned about any action which increases flows

Thank you for your consideration of our comments. Should you have any questions, please contact Ms. Sandy Shelin, Environmental Resources Branch, (509) 522-6626.

Sincerely,

Ronald G. Barrett

Ronald G Barrett, P E.
Acting Chief, Planning Division

40

United States Department of Agriculture — Forest Service

Forestry and Range Sciences Laboratory
1401 Gekeler Lane
La Grande, OR 97850
(503) 963-7122

Caring for the Land and Serving People

1900 Planning — January 13, 1988

Umatilla Forest Plan

RECEIVED
JAN 19 1988
FOREST SERVICE
UMATILLA NATIONAL FOR

James Lawrence, Forest Supervisor
Umatilla National Forest
2517 S.W. Hailey Avenue
Pendleton, OR 97801

Dear Jim,

I have read with interest several sections of your Forest Plan. In the section on "Information, Inventory, and Research Needs" I have a suggested addition under "Protection-Pest Management" for your consideration. One of the goals of forest management as I see it is to reduce or ameliorate the effects of pests using an approach that integrates pest and forest management techniques. This will probably be the most cost effective and ecologically sound way of dealing with pest problems in the future. Our unit is involved in research to help develop such techniques and we think we have some new approaches near implementation. Why not include a statement like "Integrate pest management, silvicultural, and other forest management practices for prevention or reduction of timber losses caused by insects and diseases."

The plan on a whole seems to be well prepared and complete. Don't hesitate to call on us if you need any of our research information.

Sincerely,

Boyd E. Wickman

BOYD E. WICKMAN
Project Leader

cc: William Ceisla, R-6 FPM
R. Woodfin, PNW

N - 389

32

United States Department of Agriculture — Forest Service — Pacific Northwest Research Station — Forestry Sciences Labo
3200 SW Jefferson Way
Corvallis, OR 97

Caring for the Land and Serving People

Reply to: 1520 Land and Resource Management Planning — Date: January 4, 1988

Subject: Umatilla National Forest Draft Forest Plan

RECEIVED
JAN - 4 1
FOREST SER
UMATILLA NATION

Forest Supervisor

I have reviewed the three documents that make up the Umatilla Forest Plan and would like to make some comments. My comments will pertain only to Research Natural Areas (RNA) and I will deal with each planning document separately.

DRAFT ENVIRONMENTAL IMPACT STATEMENT

P. IV-21. Although the array of established and proposed RNAs is the same in all alternatives, several of the environmental effects still pertain to RNAs and should be mentioned. Fish habitat improvements may or may not be appropriate in RNAs, depending on whether the improvement fits in with the natural regime. Timber management activities can have direct effects on RNAs. Since the level of these activities differ in all alternatives, the effects could differ on RNAs. I don't think specifics are needed, but there should be some recognition that timber activities adjacent to RNA boundaries can effect natural processes within boundaries. Accelerated windthrow is the most obvious example. The same could be said for mineral activities that might occur directly adjacent to an RNA.

APPENDICES

The treatment of RNAs in appendix H is very comprehensive, the most comprehensive of any of the eleven forest plans I have reviewed. I was especially pleased to see the forest treat RNAs within the context of the Ochoco, Blue, and Wallowa Mountains Province, rather than just the forest. Most of my comments relate to matters of clarity rather than changes in interpretation.

P. H-1. The discussion of the cellular approach to identifying potential RNAs is good. Reference is made to the "Yellow Book", and though it may seem trivial, why not refer to it using its actual title "Research Natural Area Needs in the Pacific Northwest?"

P. H-2. Why is Table H-1 limited to endangered animals? If you are going to all the trouble to list the numbers, plants should also be included. Also, there are four aquatic cells filled in existing RNAs for the province.

P. H-4. I am glad the forest recognizes the RNA system is not complete and new RNAs may need to be established in the future. I'm not sure where that is best, but recognition of the Oregon Natural Heritage Plan as the update to the "Yellow Book" is needed. Perhaps it is best mentioned

GROUP
SECR
REGIONAL
A & FM
TM

JAN 04

LE
MS
R & F
CONT
PROG

context of future RNA identification. Also at the bottom of the page the listing of cell numbers is somewhat confusing. I understand what the numbers in parenthesis refer to, but the preceding numbers that include hyphens (1-29, 6-9) are a mystery to me.

P. H-6. I also find Table H-5 confusing. What do the numbers in the cell columns refer to? 0 = only representative, but numbers 1-5 are not defined.

P. H-8. Under Implications for Research reference is made to research done in existing RNAs. A more recent and complete reference is Greene, Sarah E., et al. 1986. Research Natural Areas in Washington and Oregon: Past and Current Research and Related Literature. GTR PNW-197.

P. H-8. Under Protection a clarification is needed for fires originating within an RNA. These fires are allowed to burn only if they fit into a specific management prescription for the RNA. This necessitates a fire management plan.

P. H-10. I am very interested in table H-8. I have never seen figures like these displayed. The total of $54,204 is really not a very large sum. Unfortunately, I feel it may be a bit misleading. The larger costs may actually be in on-the-ground management after the RNAs are officially established. I fear that many people think once the areas are established they will take care of themselves. RNAs are part of a greater landscape and must be treated as such. What goes on outside of RNA boundaries effects what goes on within the boundaries and visa versa. Thus your table represents only a moment in time, and would be much more interesting and useful if it projected future management costs. Just the fact that a table like this exists, though, is great.

P. H-11. Once again I am confused by a table. In table H-9 under Sites the footnote explains what the digits refer to but does not explain what the values refer to. Perhaps I have missed something along the way.

P. H-12. The treatment of potential establishment problems is very good. As you undoubtedly know, the region is proposing across-the-board standards and guidelines for RNAs. Some of the issues discussed on p. H-12 are dealt with in these standards and guidelines. Rather than comment specifically it seems better to wait for the final on the standards and guidelines.

Finally, the discussion of Lost Meadow and Moore Flat leaves me hanging. The plan refers to them as not recommended, but not removed from consideration. The plan provides no explanation for why this course of action is taken. Are they important considerations for the future? If so, why will they be more important then than now? Moore Flat is a first ranked candidate on p. H-4, as well as a previously proposed RNA.

PROPOSED LAND USE AND MANAGEMENT PLAN

P. 4-105. I assume D2 is a kind of standards and guidelines. I'll make a few comments, though the Regional guidelines, if accepted, may supplant this. I feel the Goals statement is poorly expressed and suggest this as a replacement:

> Preservation of naturally occurring physical and biological units where natural conditions and processes are maintained insofar as possible for the purposes of: (1) comparison with those lands influenced by man; (2) provision of educational and research areas for ecological and environmental studies; (3) preservation of gene pools for typical and rare and endangered plants and animals.

The statement that RNAs in wilderness will be managed as wilderness bothers me some. I guess I would rather it read:

> If an RNA is established within wilderness, management direction for wilderness takes precedence.

Under range I would rather it read more specifically, according to FSM.

> Prohibit grazing of domestic livestock within the RNA unless it is essential to maintain a specific vegetation type.

Under minerals the statements are not consistent with Appendix H. Appendix H states rather unequivocably that RNAs "must" be withdrawn from mineral entry. The phrase used in the LMP is "will be recommended." The FSM states the Regional Forester "shall ask" the BLM for withdrawal from mineral entry.

Though my comments may seem lengthy, I am very pleased with the treatment of RNAs in the plan as a whole. If you have questions or need more information, please do not hesitate to call (FTS 420-4429, 503 757-4429).

/s/ Sarah Greene

SARAH E. GREENE
Research Natural Area Scientist
Pacific Northwest Region

cc:
Charlie Johnson
Dick Vander Schaaf

4287

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Portland Field Office
727 NE 24th Avenue
Portland OR 97232

RECE
MAR 3
FOREST
UMATILLA NA

March 25 1988

Re 1-7-87-I-155

James A Lawrence
Umatilla National Forest
2517 SW Hailey Avenue
Pendleton Oregon 97801

Dear Mr Lawrence

The Fish and Wildlife Service (Service) has reviewed your September 1987 Biological Assessment for the following forest planning documents for Umatilla National Forest (the Forest) The Draft Environmental Impact Statement (DEIS) the Proposed Land and Resource Management Plan (the Plan) and Appendices-Draft Environmental Impact Statement (Appendices) The following comments are being provided to you as part of informal consultation 1-7-87-I-155

GENERAL COMMENTS

Forest-wide standards and guidelines appear to offer adequate programmatic guidance for the review of Forest actions and their effect on threatened and endangered and sensitive species

Our letter dated November 12 1986 (1-7-87-I-8) indicated the need for adequate pre-project inventories Such inventories are particularly important in situations where the level of use by a species in the forest is not well known (as may be the case with bald eagle winter roosting habitat in the Grande Ronde River drainage) or is expected to change significantly over the next few years (as may be the case with peregrine falcon) Inventory and monitoring needs for bald eagles and peregrine falcons should be clearly outlined in your monitoring plan Long-term monitoring of bald eagle winter populations is needed before delisting can occur

If bald eagle winter roosts are present on the forest special management considerations may be necessary beyond what is provided in Forest-wide standards and guidelines and other Management Strategies for large trees and dead down tree habitat along riparian areas We encourage your Forest to develop site-specific management plans as habitat for listed species is identified

We are pleased that your Forest is aware of the need to coordinate and cooperate with Federal State and private organizations involved in recovery efforts for listed species To meet objectives as outlined in Recovery Plans potential habitat needs to be protected Based upon information in your Biological Assessment and forest planning documents potential habitat for peregrine falcons and potential nesting habitat for bald eagles are in

roadless old growth or Wild Scenic River designations that would appear to prohibit or limit timber harvest and protect potential habitat for listed species The Service concurs with your finding of no direct or long-term adverse impacts to peregrine falcons or nesting bald eagles

Recent discoveries of nesting peregrine falcons on other Forest lands indicate that recovery efforts in the Pacific Northwest are gaining momentum Because of these recovery efforts there is likely to be increased activity by peregrine falcons on your Forest within the next few years For this reason there is a need to do an annual inventory of historic and potential eyries within forest boundaries for peregrine falcon occupation particularly if timber harvest or other potentially disturbing activities may be occurring in the vicinity of potential eyrie sites or adversely affect potential food supplies Again inventories such as these provide your Forest staff with the necessary information to determine whether or not proposed timber management and other Forest actions may affect the peregrine falcon or other listed species

Section 7(a)(1) of the Endangered Species Act allows Federal agencies to utilize their authorities to carry out programs for the conservation of listed species We encourage the Forest to consider other actions within its authorities which will promote the recovery of listed species Such actions may include cooperative agreements with adjacent land owners land transfers or land exchanges to secure habitat for listed species or implementation of forest management prescriptions specifically designed to enhance habitat for use by listed species

SPECIFIC COMMENTS

PROPOSED LAND AND RESOURCE MANAGEMENT PLAN

Page 4-23 Threatened endangered and sensitive plants This section lacks a statement of forest management direction or conservation direction for sensitive plants Impact to sensitive species should be avoided wherever possible The Forest should avoid actions which will jeopardize the species The monitoring plan indicates a population decrease of 5 percent may trigger additional review

Page 4-58 Threatened endangered and sensitive species Item 2 The standards and guidelines should clearly state that all Forest actions will be reviewed for their potential to impact listed threatened and endangered species Initiation of consultation with this Service on listed species appears to have been included at appropriate decision points (Appendix page D-21)

Page 4-58 Threatened endangered and sensitive species Item 5 This Service may also be contacted for technical assistance and periodic updates on Federal candidate and listed species status (Appendix page D-21)

Page 4-60 to 4-115 All Management Areas or each Management Area which may or is likely to have threatened, endangered and sensitive species or their habitat should contain wording which indicates that forest standards and guidelines pertaining to threatened, endangered, and sensitive species will be met

N - 392

Page 5 8 Threatened endangered and sensitive species Activities should be separated into species-specific tasks wherever possible i e bald eagle productivity survey bald eagle winter roost inventory bald eagle mid-winter population survey peregrine falcon site occupation survey peregrine falcon productivity survey sensitive plant inventory etc Separation into species-specific tasks will allow more precise monitoring of activities increase reliability and precision in management and the decision process

SUMMARY COMMENTS

Based upon available information in your Biological Assessment and planning documents it appears that sufficient programmatic guidance has been provided within forest standards and guidelines to assure that a review of each forest action will be conducted in a manner consistent with the intent of the Endangered Species Act of 1973 as amended, and its requirements In addition your Forest's monitoring and evaluation program appears to offer some level of monitoring that will allow an assessment of effectiveness of forest standards and guidelines on threatened and endangered species We believe, however that monitoring of threatened endangered and sensitive species on your Forest can be improved in The Plan by separating tasks into species-specific monitoring tasks

This Service encourages your Forest to develop and implement conservation measures which will promote the recovery of listed species and the conservation of candidate species

Sincerely

Russell D Peterson
Field Supervisor

Attachment

cc
Forest Service Region 6, Attn Phil Lee

3CNA DH DISK93 03/25/883

2311

United States Department of the Interior

TAKE PRIDE IN AMERICA

OFFICE OF ENVIRONMENTAL PROJECT REVIEW
500 N E MULTNOMAH STREET SUITE 1692
PORTLAND OREGON 97232

RECEIVED
MAR 28 1988
FOREST SERVICE
UMATILLA NATIONAL FOREST

March 24, 1988

ER 87/1275

James A. Lawrence
Forest Supervisor
Umatilla National Forest
2517 S.W. Hailey Ave.
Pendleton, Oregon 97801

Dear Mr. Lawrence:

The Department of Interior has reviewed the Draft Environmental Impact Statement (DEIS) and Proposed Land and Resource Management Plan (PLRMP) for the Umatilla National Forest, Oregon and Washington. The following comments are provided for use and consideration when preparing the final documents.

Fish and Wildlife Resources

The Fish and Wildlife Service (FWS) believes the draft documents lack adequate information to evaluate the following: 1) habitat effectiveness (HE) ratings; 2) old growth needs and impacts; 3) snag management; and 4) grazing allotments in relation to condition and trend of riparian areas. Also, the final monitoring methods and techniques need to be detailed enough to ensure consistent application and interpretation over time.

Threatened and Endangered Species

The Forest has adequately addressed threatened and endangered species. Additional comments pertaining to threatened and endangered species will be provided by the FWS under separate cover.

Wild and Scenic Rivers

The PLRMP is unclear on how potential Wild and Scenic River recommendations were developed. The usual procedure established in the Wild and Scenic Rivers Act, and reaffirmed in the Forest Service's Land and Resource Management Planning Handbook, is to conduct the eligibility analysis first, the classification process second, and the evaluation of suitability for designation last. Although the Plan describes river features adequately, there is no determination of which resources meet the "outstandingly remarkable" standard necessary for a finding of eligibility.

The suitability analysis, intended to weigh the costs and benefits of designation, is missing altogether. Despite the procedural shortcomings, descriptive information on river resources is thorough and clear. The recommendations to designate the Grande Ronde and a segment of the North Fork John Day appear fully warranted, and recent efforts to develop a comprehensive plan for the entire Grande Ronde in cooperation with the Bureau of Land Management (BLM) are commendable.

There are several outstanding resources including anadromous and resident fish, wildlife, cultural, natural and scenic resources which should be considered when evaluating the North Fork John Day and the Tucannon Rivers for wild and scenic designation. Considering these factors, it appears that segments two and three of the North Fork John Day and the entire Tucannon would be good candidates for the Wild and Scenic River System. However, both are slated for management that could include additional road building and timber harvest activities.

Under the preferred alternative, many stream corridors within the Forest are bordered by management areas which allow considerable timber harvest activities. This is a concern along the southern boundary of the Wenaha-Tucannon Wilderness, where the Wenaha River corridor is adjacent to a C4 management area. Given the importance of watershed management to the maintenance of anadromous and resident fisheries in these rivers, the National Park Service (NPS) recommends greater use of C7, A1 or A8 management areas as buffers between stream corridors and areas harvested for timber.

The following revisions are recommended for consideration in the final Plan and EIS:

1. The analysis in Appendix G of the DEIS should be revised to better document the eligibility/classification/suitability process for identifying potential Wild and Scenic Rivers. Refer to Section 8.2 of the Land and Resource Management Planning Handbook (FSH 1909.12) for details.

2. Segments two and three of the North Fork John Day and the entire Tucannon River should be recommended for designation or given interim protection equivalent to designation until a full evaluation of Wild and Scenic River potential can be completed. The Grande Ronde and remainder of the North Fork John Day should still be recommended for designation.

3. Management areas bordering rivers and streams should emphasize maintenance of fisheries and riparian wildlife habitat. Additional buffers of C7, A1 or A8 areas should be developed where appropriate, particularly along the Wenaha River corridor.

Cultural Resources

The PLRMP proposes that Cultural Resources will be protected and managed as directed under the Forest Standards and Guidelines. Such direction encompasses the factors of inventory, protection, interpretation and enhancement. These guidelines appear to be satisfactory in a general sense. In the absence of a comprehensive review by the NPS, Interagency Archeological Services (IAS) Branch, the Forest is encouraged to consider the comments of the State Historic Preservation Officer.

Recreation Resources

NPS records show that there are three National Recreation Trails (NRTs) on the Forest, but there is no mention of them in these documents. The three trails are North Fork of the John Day, Windom Creek-Big Creek and Jubilee Lake. These trails should be named in the Plan in addition to the statement on page 4-17 that "Some trails will be considered for inclusion in the National Recreation Trail System." Any impacts on these NRTs by alternatives should also be described.

Mineral Resources

The description of the energy and non-energy mineral resources, past and current production value, status of known ocurrence, consequences of management alternatives on availability, and overall planning goals appears to be thorough and generally consistent with Forest Service Minerals Program Policy to encourage and facilitate exploration and development of mineral resources. However, we encourage the Forest to review the BLM's 1624 Manual regarding Supplemental Program Guidance for Energy and Mineral Resources. BLM will send the Forest a copy of this manual under separate cover.

In large part the PLRMP, DEIS and DEIS Appendix satisfy the basic planning criteria with the exception of illustrating on a map those areas open or closed to operation of the mining law and mineral leasing regulations. Such a depiction would be most beneficial if it were presented together with illustrations in the DEIS Appendix I.

In this same regard, we recommend that Table I-2 of the DEIS Appendix I include a categorization based on potential for occurrence of given mineral commodities consistent with the BLM's 3031 Manual, previously provided to the Forest Service.

There is a need for an updated mineral resource inventory and evaluation for locatable minerals, as stated on page 2-23 of the PLRMP. The plan should also include a map showing areas of mineral activity and their relationship to the different management categories. The minerals map in Appendix I is inadequate, as there are other mineralized areas in the Forest. We suggest that the final documents reflect consultation with the Bureau of Mines and that adequate maps of existing and potential mineralized areas be provided. Additional mineral data can be obtained from:

D'Arcy Banister
Bureau of Mines
Western Field Operation Center
East 360 3rd Avenue
Spokane, WA 99202

The discussion of roadless areas should also include mineral potential in each roadless area.

Although the minerals portions of the documents appear well conceived, there are several inconsistencies in the DEIS:

1. The total of withdrawn acres in Table IV-24 is 304,544; the total in Table III-22 is 349,554 and the total in the text on the same page (page III-38) is 332,868.

2. The amount of high mineral potential acreage in Table IV-24 varies between alternatives and needs an explanation.

3. All of the acreage totals (except Alternative 1) for high and moderate access restrictions in Table IV-24 disagree with those in Table II-26.

4. The figures in column 2 of Table II-26 appear incorrect, because withdrawn acres probably exceed wilderness acres (see Table III-22).

N - 393

N - 394

5. The title of column 2, Table II-26, should be changed to reflect the total of "low access restrictions." High and moderate restrictions may still be open but more difficult.

6. High and moderate restriction acreages in Table II-8 disagree with 10 of the 11 alternatives in Table IV-24.

Waste Disposal

The statement should address the disposal of solid waste generated on the Forest and any present or anticipated permitted municipal or industrial disposal of solid waste, sewage sludge, or sewage effluent on the land of the Umatilla National Forest.

Water Development

The documents in the respective "Potential Water Developments" sections, Page 2-21 and Page III-7, include paragraphs which indicate that the Bureau of Reclamation (BuRec) is evaluating a proposal to construct a dam on the North Fork of Meacham Creek as a part of the Umatilla Basin Project. This proposal was presented in an alternative to the Recommended Plan in the Umatilla Basin Project Planning Report/Draft Environmental Statement (PR/DES) released for public review in July 1986. Public, tribal and agency comments strongly favored the PR/DES Recommended Plan and, during 1988, project supporters will seek congressional authorization that does not include the North Fork storage facilities. We suggest, therefore, that those two paragraphs be deleted in the final documents.

Additional comments from the FWS related to specific portions of the subject documents are attached.

We appreciate the opportunity to review these documents.

Sincerely,

Charles S. Polityka,
Regional Environmental Officer

Attachment

ER 87/1275

Attachment 1

U.S. Department of the Interior Specific Comments Related
to the
DEIS and Proposed Land and Resource Management Plan
for the
Umatilla National Forest

DEIS

Page II-103, Old Growth. The description of old growth lacks clarity. The definition of old growth (page III-13) does not indicate age, nor are acres given. Acreage figures include mature trees; however Figure II-C and the map "Old Growth Areas 1986" give no indication that mature habitat is included. Page II-103, paragraph 1, states that old growth will decline under all alternatives, but when the maps showing dedicated old growth for each alternative are compared with "Old Growth Areas", the dedicated areas under some alternatives are greater than those in the 1986 map. Clearer definitions, comparable maps, and a column in Figure II-C showing existing old growth for comparison, would be helpful.

Page II-103, Dead and Down Tree Habitat. A snag monitoring program should be included in the final document.

Page II-104, Big Game. The Habitat Effectiveness (HE) Rating for big game should include the size and spatial distribution of forage and cover vegetation, as this is a significant relationship.

Page II-107, Riparian. This section should be expanded to include a discussion relating the use of livestock in riparian zones to water quality, bank stability and vegetative recovery. A map of riparian areas that identifies their condition and trend should be included in the final document. Additional information concerning allowing grazing in riparian areas that are in a degraded condition should also be provided.

Page III-13, Old Growth. See comment on page II-103 regarding acreage and definition of old growth. Also, in terms of plant successional stages, FWS notes that "sawtimber" is a cultural term, not an ecological one.

Page III-29, First paragraph. The final document should identify which winter ranges have conflicts in forage allocation between big game and livestock. Also the statement that "Forest-wide range condition is rated as fair or better with stable or upward trend." appears to be in conflict with the statement on page III-33 that 29 percent of the winter ranges surveyed are in poor to very poor condition. The final document should explain the relationship of these two statements and disclose the condition of rangelands on an allotment or watershed basis.

Since no grazing allotments are scheduled for reductions, how the Forest will resolve existing localized riparian and winter range problems should be described in the final EIS.

Page III-30, Management Indicator Species. The Forest needs to include at least one terrestrial indicator species for riparian habitats.

Page III-32, Big Game. For the benefit of the reviewer the final document should display the number of deer and elk needed to meet each State's objectives and display the current population levels.

Page III-33, Winter Range. Each winter range should be clearly defined by size, location, range condition, HE value and the estimated herd size. The parameters for the 1981-82 winter range survey should also be specifically defined.

Page III-33, Bald Eagle. The FWS believes that estimates by the Forest of existing bald eagles are too low. The following estimates of individual birds, provided by the Oregon Department of Fish and Wildlife, should be referenced in the final document:

Wintering Bald Eagles

Grand Ronde River	40-60
Umatilla River	10-20
North Fork John Day	10-20
North Fork Umatilla Area and Meacham Cr. area	10-15
Scattered locations	10-20

The final document should also note that additional surveys are needed to determine winter roost locations.

Page III-34, Riparian Condition. Riparian areas that are in less than good condition should be specifically identified. The final document should also provide an estimate as to when these areas could be expected to reach a good to excellent condition, and how that will be achieved.

Page III-34, Paragraph 2. This paragraph should be expanded to include a discussion as to what extent fish habitat needs and wildlife habitat needs conflict with each other.

Page III-35, Fisheries Enhancement, Paragraph 1. The FWS believes the estimate of potential for anadromous fish and resident trout is optimistic. The final documents should provide support for this estimate and cite the specific data source.

Page III-35, Paragraph 3. This discussion should be expanded to include a description of the measures being taken to protect the nonstructural improvements from livestock grazing.

Page IV-52, Paragraph 3. The results of the 30 years of monitoring condition and trend should be provided in the final document. Assessment should be made of the expected impacts that the grazing levels of each alternative would have on overall condition and trend, and on riparian areas in particular.

Page IV-54, Wildlife Habitat Improvement. The statement (paragraph 2) that "Habitat Conditions ... will be enhanced in all alternatives" is confusing. Depending on the alternative, riparian areas may deteriorate, old-growth acreage decline, etc. If the sentence applies to the fact that habitat improvement projects are planned for all alternatives, this should be clearly indicated to avoid confusion and the appearance of contradiction. Since impacts occur to wildlife from other management activities, it is assumed these impacts are over and above any enhancement provided by programmed projects. This should also be clarified.

Page IV-55, Paragraph 2. This paragraph indicates adverse impacts to wildlife due to increased grazing. Because of the critical importance of riparian and wet meadow habitats to wildlife, FWS suggests that these habitats be designated special management areas. To ensure adequate protection of these habitats MMRs should be developed and included in the final document.

Page IV-55, Paragraph 3. The final document should indicate whether fences will be designed to allow for big game passage and fully discuss impacts if they are not so designed.

Page IV-65, last paragraph. It is stated that "important hardwood habitat along streams will not be disturbed significantly." The terms "important hardwood habitat" and "significantly" as used here should be clearly defined. The final document should also state how the habitat will be protected and describe impacts if the habitat is not protected.

Page IV-67, last paragraph. Roads remaining open to ORVs are not effectively closed to motor vehicles. Disturbance from ORVs does not compare with that from non-motorized use and impacts should be assessed separately.

Page IV-172. The first sentence would give a more realistic disclosure of adverse impacts if "the removal of some existing mature and old growth trees..." was replaced with "removal (or harvest) of 66,000 acres of mature and old growth trees... ."

Page IV-173, Paragraph 8. Although timber harvest can create a short-term benefit for big game by providing forage in areas with adequate cover, this discussion should be expanded to address the long-term adverse impact on big game that results from excessive removal of hiding and thermal cover.

APPENDICES

Appendix B-59, Last paragraph. The final document should provide the rationale supporting the decision to manage winter range at a minimum level of thermal cover.

Appendix D-5, Forestwide Standards and Guidelines. Protection criteria to be established for raptor species on the Forest should be identified in the final document.

Appendix D-7, 9.c. The FWS believes that special consideration should be afforded to stream systems in poor condition or in a downward trend; i.e. Wall Creek and Camas Creek. In addition, MMR's should be established to provide extra protection to these areas until they have recovered.

Appendix L-1. Specific techniques to protect the habitats of sensitive plant species should be thoroughly described in the final document.

N - 395

N - 396

U S ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE WASHINGTON 98101

4332

MAR 2 8 1988

SUP		RES ST
SECR		LMP
AD		ENG
A & PM		PL & M
TM		PAO

APR 1 1988

LE		HORN
MS		
P & F		
CONT		
RECEP		

REPLY TO ATTN OF: WD-136

James A. Lawrence
Forest Supervisor
Umatilla National Forest
2517 S.W. Hailey Avenue
Pendleton, Oregon 97801

Dear Mr. Lawrence.

In accordance with our responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA) we have completed a review of the Proposed Land and Resource Management Plan and Draft Environmental Impact Statement (DEIS) for the Umatilla National Forest (UNF). It is located in northeast Oregon and southeast Washington and contains 1,402,475 acres.

Based on our review we rated the DEIS and Plan EC-2 (Environmental Concerns - Insufficient Information). Our rating is based on how well the DEIS and Plan documented the forest plan implementation process. This process should include the following.

A description of the data base for existing conditions from which technical experts and the public can judge the expected effects and level of uncertainty of the predictions.

Best Management Practices (BMPs) and prescription development.

Selection of BMPs for specific activities and how uncertainty is factored into selection.

Upgrading of BMPs or prescriptions to correct inaccurate predictions.

On-site inspection and administration during an activity, verifying that a particular activity is occurring as prescribed in contracts, leases, or permits.

Detailed environmental monitoring (especially for water quality and fisheries) before, during, and after the completion of an activity to determine whether impacts were accurately predicted.

Built-in feedback mechanisms so that forest activities causing a problem can be corrected before they are allowed to continue.

Our major concern with the DEIS and Plan is that the level of detail and commitment for water quality monitoring and feedback mechanism are not commensurate with the sensitivity of the resources. The enclosed detailed comments provide further analysis of the implementation process.

We appreciated the opportunity to discuss our water quality concerns in our meeting with your staff on January 11, 1988 in Seattle. Please feel free to contact us further as you develop your Final EIS and Plan. The contact in our office is Wayne Elson at (FTS) 399-1463.

Sincerely,

Robert S. Burd
Director, Water Division

Enclosures

cc: WDNR
WDE
WDF
ODW
ODEQ
ODF
USFWS
NMFS
USFS, Region 6
USFS, Region 4
USFS, Region 1

U S ENVIRONMENTAL PROTECTION AGENCY
DETAILED COMMENTS
DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
AND LAND AND RESOURCE MANAGEMENT PLAN (PLAN)
FOR THE UMATILLA NATIONAL FOREST

DEIS

Purpose and Need

I-15 The method suggested in the DEIS/Plan as to how well it responded to riparian areas issues is the fish production index and number of acres harvested per decade Another very important indicator of the DEIS/Plan's response is the commitment to riparian protection as reflected in the standards and guidelines.

Alternatives, Including the Proposed Action

II-107 The text refers to "management strategies" that were developed to provide for additional protection for riparian areas In reviewing the strategies cited it is not clear what level of protection will be provided for riparian areas. For example, management strategies A7, C5, and C6 have different perspectives in protecting riparian areas The explanation on pages 3-8 and 3-11 of the Plan which discuss responses to riparian and water resource issues are confusing as well The FEIS should include a clearer and more detailed description of the collective effect of the different management strategies on riparian areas.

II-108 Figure II-G is a bar chart of suitable riparian acres harvested by alternative The lowest alternative is E with 250 acres/decade. Alternative F (preferred) is six times E at 1,500 acres/decade. Alternative A (current direction) is 15 times E at 3,750 acres/decade. Since the text states that this reflects the intensity of activity in riparian areas, how should Figure II-G be interpreted in light of the differences between alternatives? Is the magnitude of differences that great?

Affected Environment

The DEIS includes little detail on the status of current water quality. There is some general discussion for a few streams, but no organized summary is presented which covers the whole Forest A watershed inventory would be a logical place to present information documenting water quality conditions It is difficult to evaluate effects on water quality which would result from implementing the various options without adequate documentation on the current status

IV-3 There is no inventory of wetlands which were identified for the UNF Statements in the text here indicate the presence of wetlands in the Forest. Protection of these areas must be assured.

IV-12 Concerning sediment production in fishery enhancement projects, the FEIS should explain what type of projects produce the most sediment and what mitigation opportunities exist How does the expected increase in sediment from these projects compare to timber harvesting, road construction or grazing?

IV-13 The text explains that road construction and timber harvesting share equally in the volumes of sediment being produced The opportunities for reducing road mileage for a given amount of timber harvest needs to be explained How do road miles compare to road construction techniques in reducing sediment yields?

IV-14 The long term trends in sediment yield by alternative are depicted in Figures IV-A and IV-B. The overall trend for nearly all the alternatives including the preferred alternative is an increase over the next 120 years. The FEIS should explain what implications this trend has for water quality effects, water quality standards compliance, and fish habitat conditions (page IV-8?)

IV-14 What methods will be used to determine sediment yield estimates for environmental assessments for site-specific timber sales and grazing allotment plans?

IV-75 The text explains the water and riparian conditions which can affect fish The FEIS should explain whether there is a limiting factor for fish (e.g temperature, sediment, stream structure etc.) on the UNF. If there is, how are the standards and guidelines, priorities for inventories and baseline data collection, and monitoring program designed to take this into account?

IV-76 Long-term improvements in fish populations are dependent on fish habitat improvement projects. What is the failure rate for habitat improvement projects, especially those that are designed to increase stream structure? What is the efficiency for those that succeed? Is the failure rate factored into calculations for beneficial effects?

IV-78 Long-term improvements in fish populations are also dependent on riparian management. Do these projections assume full compliance with all timber sale contract conditions and grazing allotment plan provisions which affect fish? What is has been the past experience with implementation? How is implementation assured?

IV-78 Fifth decade fish production is projected in Figures IV-N and IV-O. Figure IV-O (anadromous) differentiates between increase due to riparian management and fish habitat improvement. Figure IV-N (resident) should differentiate as well Both figures need to indicate maximum potential fish production.

IV-79 Total riparian regeneration harvest by year (Table IV-22) should include a line "SHCI increase from improvement projects."

IV-79 It is not clear whether any of the alternatives avoid management activities in riparian zones for anadromous fish or resident fish or both *If none of the alternatives do, was this considered during development of the DEIS/Plan?*

PLAN

Introduction

1-3 The text explains that Chapter 5 *includes a monitoring program to determine if standards and guidelines are being applied and if environmental effects are as predicted in the EIS This component is perhaps the most important of the DEIS/Plan.*

Summary of the Analysis of the Management Situation

2-13 The text explains that riparian vegetation and fish habitat *are good on the UNF except for areas affected by gold dredging, grazing, and road building Of the 647 miles of salmon and trout stream habitat, how many miles have been affected by the above? To what degree have fish habitat conditions been affected? To what degree can this effect be reduced in the future? How are the standards and guidelines, priorities for inventories and baseline data collection, and monitoring program designed to take this into account?*

2-23 *Information, inventory, and research needs are identified for many subjects including fish and water quality Presumably, as mentioned on page 2-14, many items can only be done when funds become available Have these needs been prioritized, especially for fish habitat conditions, riparian zones, and water quality? A schedule for when these studies and evaluations would be done should be included in the FEIS/Plan*

Responses to Issues, Concerns, and Opportunities

3-8 The paragraph beginning "On the remaining Forest riparian areas " needs to be clarified *It seems to imply that there is fish habitat in Class IV streams*

Forest Management Direction

4-2 The text includes a goal to *maintain or enhance water quality This must be conducted in a manner which will meet Oregon's water quality standards Attainment of Oregon's water quality standards should be clearly stated in the Plan We feel that attainment should be accomplished through stated fishery/water quality drainage objectives for the Forest, careful riparian area management, application of best-management practices, and soil, water, and fishery resource improvement projects.*

4-5 The text explains that completion of *stream inventories in the future will allow managers to more accurately predict environmental effects How is a "less than ideal inventory" dealt with in managing forest activities today and in the near term?*

4-33 The paragraph beginning "Water quality will meet. " *is misleading and needs to be rewritten. Water quality standards are essentially unrelated to average annual sediment production Water quality standards are instantaneous in time and space and are non sequitur to annual water pollutant loads*

4-33 Table 4-18 indicates an overall "slight degradation of water quality" due to timber management and related activities. *Increases in sediment which adversely affect the fishery could constitute a violation of the anti-degradation provision of Oregon's Water Quality Standards*

4-33 Implementation monitoring and validation monitoring of water quality *is referenced here. One of our major concerns is that a detailed monitoring plan be included with the FEIS/Plan*

4-44a The liberal use of "will" and "shall" in the riparian/fish habitat and water and soil standards and guidelines is commendable *We support their retention in the Final Plan.*

4-44 *The standard for riparian areas in Class IV steams (9.f) should be strengthened and made more specific This is needed because of the significance of the riparian zone resource in the UNF The fact that four percent of the spring chinook salmon and seven percent of the steelhead trout for the Columbia River System originate in the UNF is very significant to resource priorities. Also, large storm events produce the greatest sediment.*

4-45 *The standard for streambanks in Class I and II streams (11.c.) reads "Streambanks should have 80 percent or more of their total lineal distance in a stable condition." It needs to be more specific What condition is acceptable for the 20 percent? Stable needs to be defined.*

4-99 The text in the riparian and wildlife management area (C5) explains that "A full range of silvicultural practices and intensities is permitted when compatible with water quality and anadromous fish and wildlife habitat objectives." *How is compatibility determined and what level of risk to the resource is assumed?*

4-100 *Stream shading for perennial streams is to be managed for 80 percent for the special fish management area However, 75 percent is referenced in the Class III stream standard (page 4-45)*

4-107 The terminology "Fish habitat improvement and maintenance projects *are permitted " in the timber and forage management area is unclear. Why would habitat improvement not be permitted?*

Implementation of the Forest Plan

The major concern we have with the DEIS and Plan was that the level of detail and the commitment to monitoring and feedback mechanisms was not commensurate with protection needed by the environment. The feedback mechanisms need to be made clear so that standards and guidelines, best management practices, standard operating procedures intensity of monitoring, timber sale administration, and grazing allotment management are adjusted when monitoring indicates a need Inclusion of these components will significantly strengthen the accuracy and effectiveness of the FEIS and Plan. Further, the regulatory requirements in NEPA and the National Forest Management Act (NFMA) support the development of a detailed monitoring plan and feedback mechanism

NEPA requires that EISs include mitigation Without a detailed monitoring plan, it will be difficult for the Forest to comply with the Council on Environmental Quality's NEPA regulations which require that an EIS shall contain "means to mitigate adverse environmental impacts (40 CFR 1502 16(h)) " When adverse effects on water quality and fisheries are potentially significant, they must be mitigated A detailed monitoring plan needs to accompany any proposed mitigation activity in order to measure its effectiveness and ensure that necessary corrections are implemented

NFMA also provides the basis for a monitoring plan. The National Forest System Land and Resource Management Planning Regulations (36 CFR 219.11(d)) state that a Forest Plan shall contain a "Monitoring and Evaluation Requirement that will provide a basis for a periodic determination and evaluation of the effects of management practices " Since the effects of management practices for timber outputs can significantly affect water quality and fisheries, a detailed monitoring plan is warranted

The development of a detailed water quality monitoring plan should be based on a list of current beneficial uses, present condition, and desired future condition for each stream or a watershed unit which is small enough to adequately protect the beneficial uses. The present condition and desired future condition can best be expressed in terms of the beneficial use (e g. percent fish habitat capability) The monitoring plan should include types of surveys, location of sampling parameters to be monitored, indicator species, budget, procedures for using data or results in plan implementation, and availability of results to interested and affected groups Enclosed is a copy of our monitoring guidance Appendices A and O of the Final Nezperce National Forest Plan, October 1987 includes the level of detail and approach to water quality and fishery monitoring which we believe will accomplish the stated objectives

The draft plan does not identify drainage objectives or include a watershed resource inventory A watershed resource inventory summarizes facts, recorded measurements, observations, and other evidence which can be used to determine management objectives for rivers and streams Oregon's water quality standards and water quality management plans, for instance, were developed using inventory information An inventory is a key element needed for effective resource management The drainage objectives derived from the resource inventory then provide a means of implementing the plan

Achievement of these drainage objectives, conservation practices, and improvement projects can only be evaluated by water quality monitoring and fishery habitat surveys. The Plan does not identify any water quality monitoring program, nor criteria for evaluating riparian areas (temperature, streambank erosion, etc.) Some generalities are mentioned, however, specific sites or sampling frequencies are not identified He would support the recommendation to establish a multi-agency technical work group in Oregon to address these concerns and to advise the USFS in developing a water quality monitoring program

Plans for future monitoring on the UNF are not detailed and no explicit monitoring sites are identified It is unclear, in the Plan, how the results of monitoring efforts will be displayed to resource managers in a way that will identify where modifications are needed to protect water quality. Without an effective monitoring program, there is no assurance that adverse changes in the streams will be detected

To assist with the overall water quality management program, we have developed a water quality summary sheet. The purpose is similar to that of a "Fact Sheet" used to evaluate NPDES permits A draft copy for the UNF is being enclosed The intent is to identify a form for watershed resource inventories which could be used by EPA and the Forest Service to address water quality concerns Streams listed under "Drainage Objectives" only represent a starting point The UNF is encouraged to expand this list

5-1 The text indicates that site-specific project environmental analysis may rely on the EIS for determining environmental effects. The EIS is not specific enough for this to occur

5-2 The monitoring plan needs more detail on the first line of defense Sale administration, allotment managers, and permit managers would be the first to notice if conditions are being complied with and if effects are greater than predicted.

5-9 For riparian monitoring the unit of measure needs to include vegetation

5-9 For resident trout and anadromous fish monitoring, 10 percent rather than 20% needs to be used for variability initiating further evaluation.

5-12 He would recommend a greater reporting frequency than 5 years for water quality monitoring.

GL-17 He would recommend using the definition for riparian area utilized by the Siskiyou National Forest DEIS (Page AG-21)

Attachment A

USFS -- FOREST PLAN REVIEW

Water Quality Summary

Umatilla National Forest
2517 S H Hailey Avenue
Pendleton Oregon 97801
(503) 276-3811

USFS File Number OR-09
Draft Plan, November 1987

Significant Features

1,402,475 acres	Grant, Morrow, Umatilla, Union, and Wheeler counties
Ranger Districts	Heppner Pomeroy North Fork John Day Walla Walla
Major Basins	Umatilla, Walla Walla, and Grande Ronde
Major Rivers	Umatilla River S F Umatilla River N F Umatilla River Walla Walla River S F Walla Walla River Grande Ronde River Wenaha River N F. Walla Walla River N.F John Day River
Aquatic Ecoregion	Blue Mountains (09)
Special Protection	177,469 ac Wenaha-Tucannon Wilderness 20,144 ac. North Fork Umatilla Wilderness 106,787 ac. North Fork John Day Wilderness 18 7 miles Wenaha River (eligible Wild & Scenic) 16 9 miles Grande Ronde River (elig Wild & Scenic) 38 7 miles N.F John Day R (elig Wild & Scenic) 20 8 miles Tucannon River (eligible Wild & Scenic)

Background

The Umatilla National Forest is located in northeastern Oregon. Topography in the forest varies from undulating plateaus to rolling mountain ridges separated by steep canyons Elevations range between 1,900 and 8,000 feet above sea level The topographic variety and differences in climate across the forest are responsible for diverse vegetation Plant communities range from "true alpine" at the highest elevations; down through subalpine fir, lodgepole pine, mixed conifer (Douglas fir, Engelmann sprice, grand fir, western larch and white fir), ponderosa pine, juniper, and sagebrush communities to grassland steppes at the lower elevations About 165,000 acres of old growth forest have been inventoried

The Forest lies in the easterly extremity of the Cascade Range's rain shadow The climate of the Forest is influenced by moist winter maritime and dry summer continental climatic regimes. Winter precipitation, 55 to 65 percent of the total, generally falls in the form of snow. Average annual precipitation varies from 18 to 62 inches, with most of it falling during autumn, winter, and spring. Surface water on the Forest includes about 900 miles of perennial streams and numerous miles of intermittent streams There are also several reservoirs, natural lakes, and wetlands. Most of the water on the Forest occurs as streamflow Subsurface water is recharged annually as snowmelt and percolating rainwater.

Forested areas are used for timber production, grazing, wildlife habitat, and recreation. Agriculture followed by services, government, and timber play a principal role in the area's economy. The Forest is an important producer of sawtimber and other wood products. Trees cut by local companies are processed into lumber, plywood, wood chips, and furniture Lower elevation shrub and grassland areas are widely used for rangeland Meadows on upper mountain slopes also serve as summer grazing grounds Mining and mineral development also once contributed to the area economy, particularly in the southeastern part of the forest. Several streams were once mined intensively for metals, leaving many visible remnants. Current production of gold and silver is estimated at a value of $900,000 per year.

The more than 900 miles of rivers and streams on the Forest are a valuable resource They provide excellent quality water for spawning and rearing areas for anadromous fish, and habitat for resident trout and other native species Forest fisheries habitats are an important resource, producing an estimated 4 percent of the spring chinook salmon and 7 percent of the steelhead runs returning to the Columbia River system Other cold water species include rainbow, eastern brook, cutthroat, and bull trout, as well as kokanee and mountain whitefish. The streams and rivers also provide high quality water that is used by municipalities for domestic and industrial use, and by agriculture for irrigation of croplands and orchards. The Forest's streams are popular for fishing, boating, and camping. Recreational use at water related sites is heavy.

Drainage Objectives

Drainage objectives identify the level of water quality or fishery habitat potential to be achieved in a given watershed These are the basis of evaluating management options.

Watershed Number	Watershed Name	Beneficial Use	Current Status	Monitoring Needs
17060104-A-010	Grande Ronde River	A		***
020	Dry Creek			
030	Phillips Creek			
040	Gordon Creek			

A: Anadromous Fish
R. Resident Trout
MH: Municipal Water Supply

***: High Priority
* : Medium Priority

Watershed Number	Watershed Name	Beneficial Use	Current Status	Monitoring Needs
17060104-B-010	Lookingglass Creek	A		***
020	Swamp Creek			
030	Summer Creek			
040	Mottet Creek			
050	Little Lookingglass Creek			*
060	Jarboe Creek			*
17060106-A-010	Grande Ronde River	A		***
020	Sheep Creek			*
030	Meadow Creek			
040	Alder Creek			
050	Bear Creek			
060	Elbow Creek			*
070	Squaw Creek			
17060106-B-010	S F. Wenaha River	A		***
020	Milk Creek			*
030	Shoofly Creek			
040	Trapper Creek			
050	Jaussaud Creek			
060	N.F Wenaha River	A		***
17060106-C-010	Wenaha River	A		***
020	Beaver Creek			
030	Slick Ear Creek			
040	Rock Creek			
050	Butte Creek			*
060	N F Butte Creek			
070	E F Butte Creek			
080	Crooked Creek			*
090	Trout Creek			
100	Third Creek			
110	Second Creek			
120	Melton Creek			
130	First Creek			
17070102-A-010	S F. Walla Walla River	A		***
020	Reser Creek			
030	Skiphorton Creek			
040	Table Creek			
050	N F Walla Walla River	A		***
060	Walla Walla River	A		***
070	Mill Creek	MW		***
080	Paradise Creek			
090	Low Ridge			

A: Anadromous Fish
R: Resident Trout
MW: Municipal Water Supply

***: High Priority
* Medium Priority

Watershed Number	Watershed Name	Beneficial Use	Current Status	Monitoring Needs
17070103-A-010	S.F Umatilla River	A		***
020	Shimmiehorn Creek			
030	Spring Creek			*
040	Thomas Creek			*
050	Buck Creek			
060	N F. Umatilla River	A		***
070	Woodward Creek			*
080	Johnson Creek			
17070103-B-010	Umatilla River	A		***
020	Bobsled Creek			
030	Ryan Creek			*
040	Meacham Creek			***
050	East Meacham Creek			
060	Owsley Creek			
070	N F. Meacham Creek			***
080	Pot Creek			
090	Bear Creek			
17070202-A-010	N F John Day River	A		***
020	Crane Creek			
030	Granite Creek			***
040	Clear Creek			*
050	Lake Creek			
060	Silver Creek			
070	Glade Creek			
080	Basin Creek			
090	Big Creek			***
100	Meadow Creek			*
17070202-B-010	N.F. John Day River	A		***
020	Desolation Creek			***
030	N F. Desolation Creek			
040	S F Desolation Creek			
050	Junkens Creek			
17070202-C-010	Camas Creek			***
020	Rancheria Creek			
030	Frazier Creek			
040	Hidaway Creek			
050	Cable Creek			
070	Bear Hallow Creek			
080	Lane Creek			
090	Fivemile Creek			

A. Anadromous Fish
R. Resident Trout
MW Municipal Water Supply

*** High Priority
* . Medium Priority

Watershed Number	Watershed Name	Beneficial Use	Current Status	Monitoring Needs
1/070202-D-010	N F John Day River	A		***
020	Potamus Creek			***
030	Mallory Creek			
040	Ditch Creek			
050	Big Wall Creek			
060	Hilson Creek			
070	Little Wall Creek			

A Anadromous Fish
R Resident Trout
MW Municipal Water Supply

*** High Priority
* . Medium Priority

NATIONAL FOREST
WATER QUALITY MONITORING
RECOMMENDATIONS

GENERAL MONITORING GUIDELINES

Priorities. Greatest priority should be given to assessing fishery impacts in the following order: 1) endangered anadromous runs; 2) other anadromous runs; 3) resident salmonids; 4) and others, including warm water species.

Site Selections. Site selection for monitoring impacts on the above fish population should reflect the need for a representative range of environmental conditions, e.g., soil type, channel morphology, and erosion potential. Special attention should be given to watersheds with the greatest sediment production potential. Consideration must also be given to monitoring in heavily developed watersheds and in watersheds developed or disturbed in increments over time to evaluate cumulative effects upon fishery resources.

Paired Watersheds. Paired watersheds should be selected wherever possible, consisting of a representative stream reach in the watersheds to be developed and a comparable reach in an undeveloped watershed. Control (or reference) reaches should be selected based upon similarity in stream slope, elevation, streamside vegetation, bank stability, fishery, soil type, stream classification, etc.

Timing. Timing of monitoring should emphasize detecting impacts from first entry into a watershed. This may require prior monitoring to establish adequate baseline data in both the developed and undeveloped watersheds.

Frequency. Frequency and location of monitoring should be periodically adjusted to reflect needs or problems identified in the ongoing monitoring. Typically, monitoring at a specific site will be initially intensive, with a later shift to periodic trend verification.

Long-Term Monitoring. Certain aspects of the monitoring should be designed to evaluate impacts not detectable on a short-term basis. Examples are long-term stabilizaton of logging roads, recovery rates of degraded streams, persence of large woody debris, etc.

IMPLEMENTATION MONITORING

This on-site monitoring should evaluate the correctness of Best Management Practices (BMP) implementation. This information will be critical in determining whether adverse instream habitat impacts were caused by inadequate BMPs or improper implementation of BMPs. In general, however, we feel that the specific method used to evaluate the correctness of BMP implementation are best identified by the U.S. Forest Service (USFS).

EFFECTIVENESS MONITORING

Stream Monitoring Parameters. Both fish density (by species and age class) and fish habitat quality should be evaluated. Habitat quality should not be confined solely to substrate composition (e.g., cobble embeddedness and percent fine sediment by depth), but should also include such factors as pool/riffle ratio, amount and size of large organic debris, vegetative cover, channel morphology, etc. Data should be gathered by the most cost effective method while insuring data quality, and utilization of standard methods of measurement and analysis.

CALIBRATION MONITORING

The total monitoring effort should be carefully designed so that one outcome is to improve our ability to predict via models: 1) the actual sediment loading to a stream; 2) the actual impact of those sediments on fish habitat; and 3) the actual impacts of those sediments or other fish habitat changes on fish population.

INTERAGENCY SUPPORT/COORDINATION

Technical Fisheries Advisory Committee. To improve interagency coordination (and to provide technical assistance and support), we suggest that the USFS establish a technical fishery advisory committee in each state. This group could consist of representatives of government agencies who manage the resource or whose activities impact the fisheries resource. By meeting quarterly, or as significant issues arise, this group could identify, and hopefully resolve problems as they develop. They could also play a key role in assisting the USFS in preparing and presenting the annual monitoring report discussed below.

Annual Monitoring Report. We suggest that an annual public meeting be held to brief all parties on the monitoring results. To minimize travel costs, the USFS could review results from individual forests within a state at a single meeting. This would also facilitate comparison of results from different forests. The technical fisheries advisory committee could help the USFS develop, and present a consensus on impacts and needed actions.

Written material should focus on an analysis of planned vs actual actions and impacts. For example, where water quality problems occurred, the USFS should clearly define the nature and cause of the problems, the corrective actions taken, and the procedures to be used to prevent future occurrences. This material, together with supporting data, should be made available to all parties prior to the public meeting. A more formal written report summarizing long-term trends and impacts should be prepared periodically, possibly at 5-year intervals.

N - 404

(1)

Department of Transportation
HIGHWAY DIVISION
Region 5 Office
P.O. Box 850, La Grande, OR 97850 963-3177

November 20, 1987

RECEIVED
NOV 23 1987
FOREST SERVICE
UMATILLA NATIONAL FOREST

James A Lawrence, Forest Supervisor
Umatilla National Forest
2517 SW Hailey Avenue
Pendleton, OR 97801

Dear Mr. Lawrence;

SUBJECT: Proposed Environmental Impact Statement
Proposed Land & Resource Management Plan
U.S. Forest Service - Umatilla National Forest

This letter is in response to the current planning effort by the U.S. Forest Service in developing an Environmental Impact Statement, and a Land & Resource Management Plan for the Umatilla National Forest. The following recommendations and "areas of concerns" are included for consideration in developing the final Forest Service environmental and planning documents.

1. General Highway Impacts: The documents identify several highways (Highways 204, 207, 244, 395 & I-84) and connecting county roads as providing the major access to the Umatilla National Forest. Yet the documents offer no assessment or analysis of potential impacts the various alternatives could have on these highways and county roads. Varying amounts of logging and recreational traffic tied to specific alternatives could affect Highway Division and county advanced construction and maintenance planning.
2. Highway Vision Clearance: Effective thinning of trees adjacent to highways is important to the safety of the traveling public. By leaving a clear zone between the highways and adjacent timber stands, the motorist benefits in two ways: a) fewer accidents between motorists and deer/elk, and b) a clear zone that eliminates shady spots on the highway which allows surface highway moisture to freeze--causing unsafe driving conditions. The environmental and planning documents should include this information as a policy concerning timber harvesting and management of lands adjacent to State highways.

3. Protecting Material Sources: The Highway Division is concerned about (and interested in) preserving the integrity and usability of aggregate/material resources. The extraction of rock and aggregates from material sites is jeopardized when non-compatible, conflicting uses are in close proximity to these sites. It is recommended that material resource sites in the National Forest be specifically protected so that the Highway Division and the U.S. Forest Service can utilize these material resources for highway/road facilities maintenance.
4. Maintaining Interagency Cooperation: The documents should include policy statements that encourage cooperation between the two agencies concerning maintenance and minor widening/improvements for these public roads and highway facilities that are located within the Umatilla National Forest. It is important to the Highway Division that these types of highway activities be allowed without time-consuming negotiations between the two agencies.

Thank you for the opportunity of replying to the Draft Environmental Impact Statement and the Proposed Land and Resource Management Plan. Please keep our agency informed as to the status of this project.

Sincerely,

John Preston
Region 5 Environmental/Planning Coordinator

JP:rt

US Department of Transportation
Research and Special Programs Administration

14

RECEIVED
FOREST SERVICE
UMATILLA NATIONAL FOR

DEC - 8 1987

Forest Supervisor
Umatilla National Forest
2517 S.W. Hailey Avenue
Pendleton, OR 97801

Dear Sir:

We have reviewed the Draft Environmental Impact Statement, Proposed Land and Resource Management Plan for the Umatilla National Forest.

In our review we noted that on page III-49 two gas lines are mentioned as existing in a corridor 1-1/2 miles wide along Interstate 84. We believe that mention should be made that all natural gas and hazardous liquid pipelines other than rural gathering lines must comply with the safety requirements of Title 49 of the Code of Federal Regulations, Parts 192 and 195, respectively.

Sincerely,

Cesar De Leon
Assistant Director for Regulation
Office of Pipeline Safety

462

US Department of Transportation
Federal Highway Administration

RECEIVED
FEB 22 1988
FOREST SERVICE
UMATILLA NATIONAL FOREST

Region 10
Alaska, Idaho
Oregon, Washington

708 S.W. Third Avenue
Portland, Oregon 97204

February 17, 1988

In Reply Refer to:
HPP-010.2

Mr. James A. Lawrence, Forest Supervisor
Umatilla National Forest
2517 S.W. Harley Avenue
Pendleton, Oregon 97801

Dear Mr. Lawrence:

Federal Highway Administration, Region 10, has reviewed the draft environmental impact statement for the Umatilla National Forest Land and Resource Management Plan and offers the following comments for your consideration:

Oregon highway routes 204, 207, 244, 395 and I-84, which are on the Federal-aid highway system, are within the Umatilla National Forest. Quite often such highways in National Forest areas do not have defined right-of-way. To make highway improvements with FHWA funds on any of the above routes, or any Forest Highway System routes which may use any lands designated as recreation, requires a determination by FHWA that there is no other feasible and prudent alternative than the selected proposal. Without an adequately defined right-of-way, this has, in similar situations, caused considerable delay in project implementation and increased taxpayer expense.

We suggest the final EIS acknowledge that when right-of-way for Federal-aid highway routes or forest highway routes are not defined, a management effort will be made to work out such details with the government officials having operating responsibilities for that route.

Ideally, in any area designated recreation by you, the designated right-of-way should be of sufficient width to allow bridge replacements, roadway widening, or elimination of safety hazards such as bad curves. Roadway improvements within a defined corridor designated for highway use do not require a 4(f) determination. NEPA action will apply to all highway improvements.

Sincerely,

E. J. Valach, Director
Office of Planning and
Program Development

N - 405

N - 406

NEZ PERCE TRIBE 4197

RECEIVED
MAR 29 1988
FOREST SERVICE
UMATILLA NATIONAL FOREST

Nez Perce
TRIBAL EXECUTIVE COMMITTEE

P.O. Box 305
LAPWAI, IDAHO
83540
(208) 843-2253

March 28, 1988

Mr. James F. Torrence
Forest Supervisor
Umatilla National Forest
2517 s.w. Hailey Ave.
Pendleton, OR 97801

Dear Mr. Torrence,

Enclosed are the comments of the Nez Perce Tribe on the proposed management plan and its draft environmental impact statement. We appreciate the effort that has gone into preparing this plan. We hope that the Forest Service will consider our concerns about providing for our treaty rights and other tribal rights on the Umatilla National Forest. We look forward to working with the Forest Service at later stages in the planning process.

Sincerely yours

Allen V. Pinkham, Chairman
Nez Perce Tribal Executive Com.

A. Josephy, The Nez Perce Indians and the Opening of the Northwest (Abridged), 235-76 (1971). The Nez Perce, the largest of the Inland Northwest Tribes, stayed neutral in that conflict, judging correctly that fighting would only lead to a loss of their lands. Id, at 269-76. Their strength, their friendly neutrality towards the United States, and their location away from the main thrust of settlement paid off in 1855. The Nez Perce, unlike other neighboring tribes, signed a treaty confirming their rights to continue to occupy almost all of their aboriginal lands, Id, at 325, including portions of what is now the Umatilla National Forest. Figure III-E, Draft EIS, Proposed Land and Resource Management Plan, Umatilla National Forest (hereinafter "Draft EIS"). The treaty also guaranteed to the Nez Perce that

> the exclusive right of taking fish in all the streams where running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual and accustomed places in common with citizens of the territory; and of erecting temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land.

12 Stat. 957, Article 3 (emphasis added).

Governor Stevens, who negotiated the treaty with the Indians, clarified that these treaty rights attach to all the lands aboriginally used by the Nez Perce, saying:

> You will be allowed to pasture your animals on land not claimed or occupied by settlers, white men. ... You will be allowed to go to the usual fishing places and fish in common with the whites, and to get roots and berries and to kill game on lands not occupied by whites; all this outside the Reservation.

State v Arthur, 74 Idaho 251, 261 P.2d 135 (1953).

Eight years later, the bargaining position of the Nez Perce had changed dramatically. Another military campaign had broken the fighting power of the neighboring tribes, leaving the Nez Perce alone to face the United States. A. Josephy, supra, at 324-76. More and more settlers were pouring into Oregon, hungry for land. And gold had been discovered on Nez Perce lands, setting off an illegal gold rush on the reservation. Id, at 377-99. The Nez Perce were forced to sign the 1863 treaty, ceding much more of their aboriginal territory. In this treaty the Nez Perce ceded the lands now encompassing the Umatilla National Forest which had been part of the reservation in the 1855 treaty, making these lands "off-reservation" lands.

The 1863 treaty confirmed that the Indians would have "*the same privileges ... outside of the reservation*" as were contained in the 1855 treaty. Article 8. Thus the Nez Perce have treaty fishing, hunting, grazing, and gathering rights on their ceded lands on the Umatilla National Forest. The courts have ruled that National Forest lands qualify as "open and unclaimed". State v. Arthur, 74 Idaho 251, 261 P.2d 135 (1953).

The off-reservation right to fish, to gather plants, to graze, and to hunt was a critical provision of the treaty for the Nez Perce. Fish, plants, and game formed the three mainstays of their diet at that time. A. Marshall, Nez Perce Social Groups: An Ecological Interpretation, 37 (1977). Fish was the single most important food resource for the Nez Perce, followed by gathered roots and other plants and by game. One anthropologist estimates that fish met about half the Nez Perce food needs, elk and deer provided 15-30% of their annual food supply, and roots and other plants made up the remainder. Id.

At the time the treaties were signed, grazing was also of great importance to the Nez Perce. The Nez Perce raised large numbers of horses, for which they were justly famous. The rich grassland prairies that made up so much of the Nez Perce homeland provided prime grazing lands for these herds. Introduction of horses at the beginning of the eighteenth century had greatly enriched Nez Perce life, allowing access to buffalo on the plains over the Bitterroots to the east.

A. Josephy, The Nez Perce Indians and the Opening of the Northwest, (Abridged), at 24-29. By the time of the treaties, the Nez Perce had also begun to acquire cattle. Id, at 215, 282 In fact, when the gold miners came into their country, some Nez Perce were prepared to profit from the situation by selling them horses and beef. Id, at 385.

The courts have provided extensive interpretation in recent years of such off-reservation treaty rights in the Pacific Northwest, especially the right to fish at the usual and accustomed places. The courts have concluded that the fishing right involves more than just a chance to pursue fish. If that were all that the treaties guarantee, those promises would indeed be hollow and the Indians would have received very little for all their ceded lands. The courts have recognized that in these negotiations both the government and the Indians intended the Indians to have continued actual use of resources necessary for their support. Fish were too important a resource for most Northwest Indian tribes to trade away. Under the pressure of a seemingly limitless and overwhelming stream of settlers, the Northwest tribes were forced to give up most of their lands, but were willing to do so only if they kept access to the fish and game that sustained them. Washington v. Washington Commercial Passenger Fishing Vessel Assn, 443 U.S. 658, 664-669, 676-77 (1979). Therefore the fishing right goes beyond the right to try to catch fish -- it includes the right to an environment capable of supporting fish. United States v. Adair, 723 F.2d 1394 (9th Cir. 1984). Thus the off-reservation treaty fishing right also entitles the Tribe to a right to sufficient water quantity and quality to support populations of fish. Id, Northwest Indian Cemetery Protective Assn. v. Peterson, 565 F.Supp. 586, 605 (N.D.Cal. 1983), aff'd 795 F.2d 688 (9th Cir. 1986), cert. granted sub nom Lyng v. Northwest Indian Cemetery Protective Assn, 95 L.Ed 2d 812 (1987). See also Colville Confederated Tribes v. Walton, 647 F.2d 42 (9th Cir. 1981)(right to an adjudication of on-reservation water rights for a resident fishery established to replace off-reservation fishery destroyed by dams), Confederated Salish & Kootenai Tribes v. Flathead Irrigation and Power Project, 616 F.Supp. 1292 (D.Mont. 1985)(right to sufficient water to support fish populations on the reservation).

The Indians' treaty right to this environmental quality creates a concomitant duty on the part of state and federal governments to provide and to protect such habitat. Id. (state government); Confederated Tribes of the Umatilla Indian Reservation v. Alexander, 440 F.Supp. 553 (D. Ore. 1977) (federal government). This duty constrains, in particular, federal agencies who are executing federal law. Absent express congressional authorization, a federal agency cannot take action that will so alter stocks of fish as to nullify treaty

rights. Confederated Tribes of the Umatilla Indian Reservation v. Alexander, supra. The courts will not find such congressional authorization to be implicit in federal law, in part because any abrogation of treaty rights would give rise to a Fifth Amendment claim for compensation. Menominee Tribe v. United States, 391 U.S. 404 (1968). Federal agencies thus must protect tribal treaty rights to "the amount of water necessary to support tribal hunting and fishing rights . . . to maintain the livelihood of Tribe members . . ." United States v. Adair, 723 F.2d 1394, 1414 (9th Cir. 1984).

No similar litigation has occurred in the area of treaty hunting rights. Nevertheless, for a tribe such as the Nez Perce, to whom game was an important resource, there is no reason to interpret their off-reservation hunting right substantially differently than their off-reservation fishing right. Both rights are contained in the same treaty clause. Both were discussed together by Governor Stevens, when he assured the Indians that they could continue to fish, to gather and to hunt as they were accustomed. Both rights were an important part of the bargain struck in the 1855 and 1863 treaties. Just as the off-reservation fishing right carries with it a right to habitat to support fish, so the off-reservation hunting right imposes on the federal government an obligation regarding management of the game habitat in the Indians "open and unclaimed" hunting grounds. The federal government must manage those lands to assure sufficiently healthy game populations to meet the Indians' needs.

II. IMPACTS TO FISH

In light of the above discussion of treaty fishing rights, it is clear that the Nez Perce Tribe has an interest in all activities which affect anadromous and resident fish populations in the ceded area. We appreciate the effort which has gone into development of the Umatilla National Forest Management Plan.

High quality water is essential for the production of fish. Fish production on federal lands is necessary for the the federal government is to fulfill its trust responsibility under the treaties negotiated with the Nez Perce Tribe.

After comparing the various alternatives, the Tribe would support Alternative D as the Preferred Alternative. Alternative D is better for fish with only a slight reduction in timber production from the Forest Service's preferred alternative, Alternative F.

The management guidelines for the riparian zone are one of the major advantages in Alternative D. The average harvest in the riparian zone is 830 acres per decade. This is 45% less than the cut allowed in the riparian zone in

Alternative F. A reduced cut, natural regeneration, and low to moderate grazing pressure in the riparian zone will produce *reduced sediment yields, better cover, smaller temperature* fluctuations, and higher quality water with a corresponding increase in fish production potential.

III. IMPACTS TO BIG GAME

A. Elk

The Tribe does not claim to possess the information or capability to evaluate the FORPLAN models, instead concentrating on trying to examine the assumptions built into them In managing elk habitat the Umatilla Draft Plan appears to place a heavy emphasis on the Forest Average Open Road Density Thus for instance, Alternative D, which is supposed to emphasize elk, among other similar outputs, has one of the lowest road densities. This is, however, offset by the third *highest amount of off road vehicle (ORV) use. The detrimental* effects of high road densities are well documented in the literature and, we assume, built into the model. How does the model treat ORV use? Is such use considered as detrimental to elk habitat as an open road? What studies has the Forest Service relied on in determining the effects of ORV access on elk habitat? Even the alternative designed to provide "maximum *response" to increasing potential big game populations,* Alternative G, allows ORV access to 345,000 acres of the Forest. If ORV use is detrimental to elk habitat, and if the Forest Service's "big game" alternative allows such a substantial amount of ORV access, has the Forest Service really come up with a full range of alternatives in the Draft EIS? The Tribe has not had an opportunity closely to examine the model used to project elk numbers under different management alternatives. It does seem strange, however, that the first decade Timber Sale Program Quantity can vary by 149% between alternatives while the elk population varies by only 12%. Can road closure management really have that much effect or does this indicate a flaw in the model? The entire analysis of elk impacts in the EIS is rooted in this model. Given these uncertainties, the Forest Service must design a monitoring program sufficient to ground truth the model, testing its assumptions and refining them in the next planning cycle if monitoring shows that to be necessary.

The Forest Service appears to be heavily relying on road closures for effective elk habitat management. The Nez Perce Tribe has biologists who are actively involved in managing game populations throughout the ceded area. The Tribe would like to have its wildlife biologists included in Forest Service decisionmaking concerning road closures.

Each alternative shows a decreasing elk population and an increase in grazing by the fifth decade over first decade values, although Figure IV-D of the Draft EIS shows the total

available forage over all alternatives as relatively stable. Although most alternatives stay within 10% of the current state elk management objectives, there are no alternatives showing an increasing elk herd over 50 years. Has some sort of ceiling been imposed on the model limiting elk numbers allowed?

B. Bighorn Sheep.

Both the Washington Department of Wildlife and the Oregon Department of Fish and Wildlife (ODF&W) have an active Bighorn Sheep Management Plan. The Nez Perce Tribe endorses the ODF&W long range plan for Rocky Mountain and California bighorn sheep reintroduction. The Tribe believes that these animals were common to the major river canyons of this region until overexploitation of the resource occurred during the latter part of the nineteenth century and domestic sheep were introduced in large numbers. The Tribe agrees that the goal should be to reestablish this animal in historic ranges. On page IV-71 of the Draft EIS the Forest Service states that increased grazing under certain alternatives may conflict with these state plans. There have been serious bighorn sheep die-offs that appear to be related to contact with domestic sheep Any attempt to increase domestic sheep range on the Umatilla National Forest, at the expense of the bighorn sheep reintroduction program will be viewed by the Nez Perce Tribe as an abrogation of treaty rights since the restoration program is aimed at returning a resource aboriginally available to, and used by, the Nez Perce.

IV. HYDROLOGIC EFFECTS

The DEIS does discuss in general terms some of the effects forest management can have on water production. This discussion admits that vegetative cover can "directly affect the volume and timing of runoff." Draft EIS, at III-4. The document also admits that forest management can affect water temperature and sediment yield. Draft EIS, at IV-12. In a later section, however, the Draft EIS describes a hydrologic study conducted on the Forest, which found "no statistically significant changes in peak or low flow as a result of timber harvesting." Draft EIS, at IV-13. The timber harvest in this study occurred in 1976, an anomolous year of abnormally low snowpack. The report of the study was published in 1980. The Nez Perce Tribe urges the Forest Service to continue collecting data in this study, in order to obtain a long enough baseline for proper analysis. Given the fact that numerous other studies in other parts of the western United States and Canada have found such effects to occur, the Forest Service should not so blithely exclude considering such effects. See e.g. T.W. Chamberlin, Influence of Forest and Rangeland Management on Anadromous Fish Habitat in Western North America: Timber Harvest (Technical Report PNW-136, April, 1982), Pacific Northwest Forest and Range Experiment Station, USFS, USDA, Portland.

V. CULTURAL SITES

The Umatilla National Forest partially lies within the Nez Perce 1863 treaty ceded area. Thus part of the Forest comprises lands aboriginally occupied by the Nez Perce. The Nez Perce also have off-reservation treaty rights to these lands, including a right to gather roots and berries.

On the Umatilla National Forest there are numerous sites of importance in Nez Perce heritage and culture. These include archeological sites which the Forest Service intends to inventory There are also, however, cultural sites on the Forest of a different nature: sites that have been and continue to be important in Nez Perce traditional religious practices and sites where medicinal herbs and roots can be found. The Forest Service makes no mention in its Draft Plan of cultural sites other than archeological sites and the Plan includes no provisions for protecting such sites.

The Nez Perce are entitled to protection of all these sites The archeological sites must be inventoried and protected under the Archeological Resources Protection Act of 1979, (ARPA) 16 U.S C §§ 470aa et seq., and the Antiquities Act of 1906, 16 U S.C §§ 431-33. ARPA bars removal or damage of archeological resources without a permit. 16 U.S.C. § 470ee(a) These statutes, since they are designed to protect items of Native American heritage, impose on the Forest Service a trust responsibility to preserve Nez Perce archeological sites

Additionally, the Nez Perce Tribe may very well have a property interest in Nez Perce burial sites. Recent litigation in Louisiana determined that a tribal government could have ownership rights in the remains and artifacts buried with tribal ancestors. Charrier v. Bell, 496 So.2d 601 (La. Ct. App., 1st Cir. 1986), cert. denied 498 So.2d 753 (La.). This litigation began as a quiet title action between an amateur archeologist and the landowner over the "Tunica Treasure," artifacts buried with Tunica Indians in the eigteenth century. The Tunica Biloxi tribe intervened, asserting that the bodies and artifacts from these burial sites were tribal property. The Louisiana courts ruled in favor of the Tribe, finding that the Tribe had not abandoned these remains or the objects buried with them. The courts allowed the present day descendents to assert a legal claim to their ancestors' burial remains.

Sites of importance for the exercise of Nez Perce religion are also entitled to protection. In litigation over forest management in similar high country sites in California, the Ninth Circuit Court of Appeals enjoined the Forest Service from timber harvest and road construction. Northwest Indian Cemetery Protective Ass'n v. Peterson, 795 F.2d 688 (9th Cir. 1986), cert granted 95 L.Ed 2d 812. Thus the Forest Service is under an obligation to protect such sites. Yet the Draft Plan makes no provisions for identifying or setting aside such areas.

UMATILLA
NATIONAL FOREST

LAND AND RESOURCE MANAGEMENT PLAN

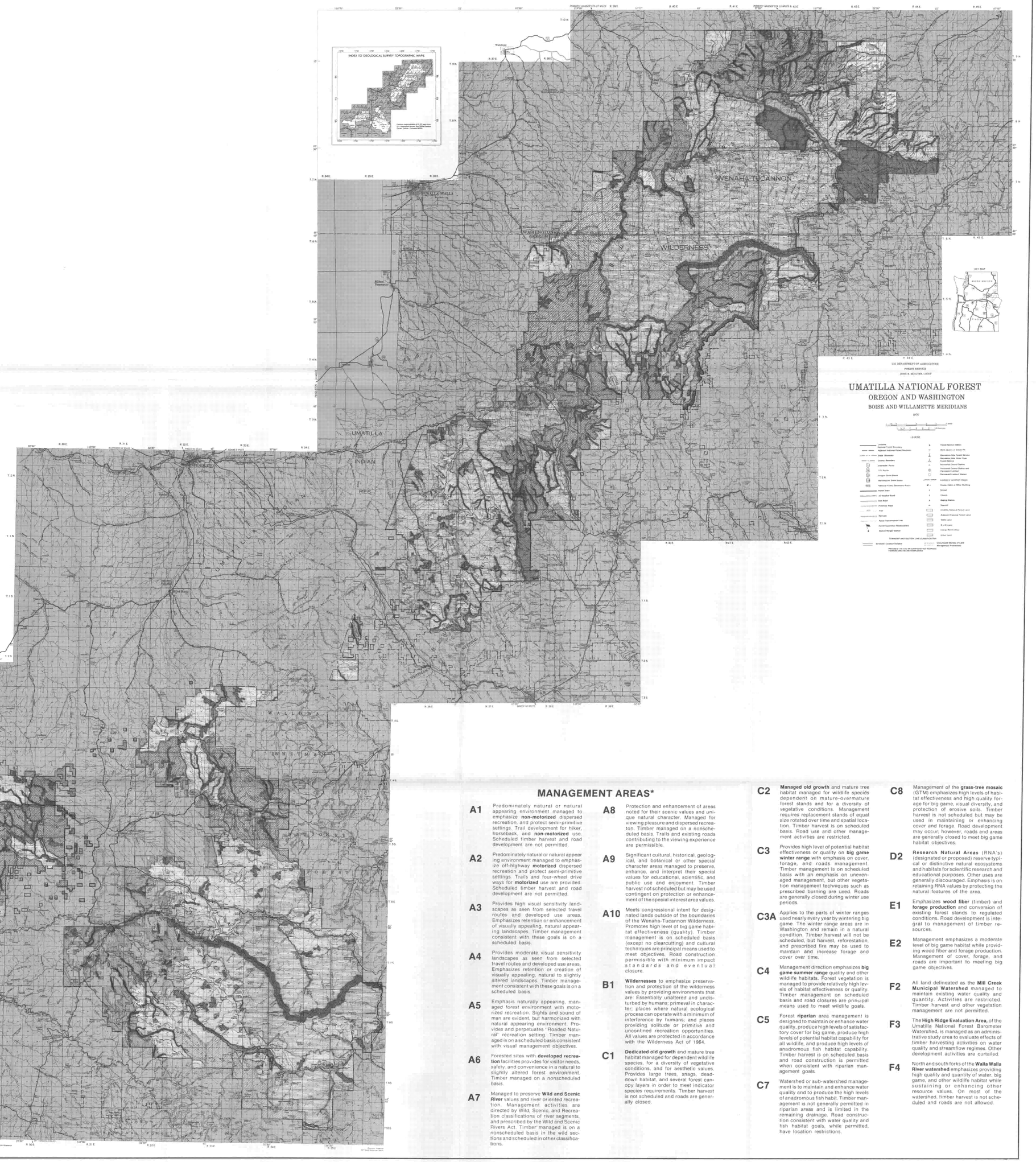
(ALTERNATIVE F/M PREFERRED)

FINAL
ENVIRONMENTAL IMPACT STATEMENT

MARCH 1990

LEGEND

- A1 NONMOTORIZED DISPERSED RECREATION
- A2 ORV RECREATION
- A3 VIEWSHED 1
- A4 VIEWSHED 2
- A5 ROADED NATURAL
- A6 DEVELOPED RECREATION
- A7 WILD & SCENIC RIVER
- A8 SCENIC AREA
- A9 SPECIAL INTEREST AREA
- A10 WENAHA – TUCANNON SPECIAL MANAGEMENT AREA
- B1 WILDERNESS
- B1 & D2 WILDERNESS & RESEARCH NATURAL AREA
- B1 & A7 WILDERNESS & WILD AND SCENIC RIVER
- C1 DEDICATED OLD GROWTH
- C2 MANAGED OLD GROWTH
- C3 BIG GAME WINTER RANGE
- C3A SENSITIVE BIG GAME WINTER RANGE
- C4 WILDLIFE HABITAT
- C5 RIPARIAN AND WILDLIFE
- C7 SPECIAL FISH MANAGEMENT AREA
- C8 GRASS–TREE MOSAIC (GTM)
- D2 RESEARCH NATURAL AREA
- E1 TIMBER AND FORAGE
- E2 TIMBER/BIG GAME
- F2 MILL CREEK WATERSHED
- F3 HIGH RIDGE EVALUATION AREA
- F4 WALLA WALLA RIVER WATERSHED



MANAGEMENT AREAS*

A1 Predominately natural or natural appearing environment managed to emphasize **non-motorized** dispersed recreation, and protect semi-primitive settings. Trail development for hiker, horseback, and **non-motorized** use. Scheduled timber harvest and road development are not permitted.

A2 Predominately natural or natural appearing environment managed to emphasize off-highway **motorized** dispersed recreation and protect semi-primitive settings. Trails and four-wheel drive ways for **motorized** use are provided. Scheduled timber harvest and road development are not permitted.

A3 Provides high visual sensitivity landscapes as seen from selected travel routes and developed use areas. Emphasizes retention or enhancement of visually appealing, natural appearing landscapes. Timber management consistent with these goals is on a scheduled basis.

A4 Provides moderate visual sensitivity landscapes as seen from selected travel routes and developed use areas. Emphasizes retention or creation of visually appealing, natural to slightly altered landscapes. Timber management consistent with these goals is on a scheduled basis.

A5 Emphasis naturally appearing, managed forest environment with motorized recreation. Sights and sound of man are evident, but harmonized with natural appearing environment. Provides and perpetuates "Roaded Natural" recreation setting. Timber managed is on a scheduled basis consistent with visual management objectives.

A6 Forested sites with **developed recreation** facilities provides for visitor needs, safety, and convenience in a natural to slightly altered forest environment. Timber managed on a nonscheduled basis.

A7 Managed to preserve **Wild and Scenic River** values and river oriented recreation. Management activities are directed by Wild, Scenic, and Recreation classifications of river segments, and prescribed by the Wild and Scenic Rivers Act. Timber managed is on a nonscheduled basis in the wild sections and scheduled in other classifications.

A8 Protection and enhancement of areas noted for their scenic values and unique natural character. Managed for viewing pleasure and dispersed recreation. Timber managed on a nonscheduled basis. Trails and existing roads contributing to the viewing experience are permissible.

A9 Significant cultural, historical, geological, and botanical or other special character areas managed to preserve, enhance, and interpret their special values for educational, scientific, and public use and enjoyment. Timber harvest not scheduled but may be used contingent on protection or enhancement of the special interest area values.

A10 Meets congressional intent for designated lands outside of the boundaries of the Wenaha-Tucannon Wilderness. Promotes high level of big game habitat effectiveness (quality). Timber management is on scheduled basis (except no clearcutting) and cultural techniques are principal means used to meet objectives. Road construction permissible with minimum impact standards and eventual closure.

B1 **Wildernesses** to emphasize preservation and protection of the wilderness values by providing environments that are: Essentially unaltered and undisturbed by humans; primeval in character; places where natural ecological process can operate with a minimum of interference by humans; and places providing solitude or primitive and unconfined recreation opportunities. All values are protected in accordance with the Wilderness Act of 1964.

C1 **Dedicated old growth** and mature tree habitat managed for dependent wildlife species, for a diversity of vegetative conditions, and for aesthetic values. Provides large trees, snags, deadfall, and several forest canopy layers in order to meet indicator species requirements. Timber harvest is not scheduled and roads are generally closed.

C2 **Managed old growth** and mature tree habitat managed for wildlife species dependent on mature-overmature forest stands and for a diversity of vegetative conditions. Management requires replacement stands of equal size rotated over time and spatial location. Timber harvest is on scheduled basis. Road use and other management activities are restricted.

C3 Provides high level of potential habitat effectiveness or quality on **big game winter range** with emphasis on cover, forage, and roads management. Timber management is on scheduled basis with an emphasis on uneven-aged management, but other vegetation management techniques such as prescribed burning are used. Roads are generally closed during winter use periods.

C3A Applies to the parts of winter ranges used nearly every year by wintering big game. The winter range areas are in Washington and remain in a natural condition. Timber harvest will not be scheduled, but harvest, reforestation, and prescribed fire may be used to maintain and increase forage and cover over time.

C4 Management direction emphasizes **big game summer range** quality and other wildlife habitats. Forest vegetation is managed to provide relatively high levels of habitat effectiveness or quality. Timber management on scheduled basis and road closures are principal means used to meet wildlife goals.

C5 Forest **riparian** area management is designed to maintain or enhance water quality, produce high levels of satisfactory cover for big game, produce high levels of potential habitat capability for all wildlife, and produce high levels of anadromous fish habitat capability. Timber harvest is on scheduled basis and road construction is permitted when consistent with riparian management goals.

C7 Watershed or sub-watershed management is to maintain and enhance water quality and to produce the high levels of anadromous fish habit. Timber management is not generally permitted in riparian areas and is limited in the remaining drainage. Road construction consistent with water quality and fish habitat goals, while permitted, have location restrictions.

C8 Management of the **grass-tree mosaic** (GTM) emphasizes high levels of habitat effectiveness and high quality forage for big game, visual diversity, and protection of erosive soils. Timber harvest is not scheduled but may be used in maintaining or enhancing cover and forage. Road development may occur; however, roads and areas are generally closed to meet big game habitat objectives.

D2 **Research Natural Areas** (RNA's) (designated or proposed) reserve typical or distinctive natural ecosystems and habitats for scientific research and educational purposes. Other uses are generally discouraged. Emphasis is on retaining RNA values by protecting the natural features of the area.

E1 Emphasizes **wood fiber** (timber) and **forage production** and conversion of existing forest stands to regulated conditions. Road development is integral to management of timber resources.

E2 Management emphasizes a moderate level of big game habitat while providing wood fiber and forage production. Management of cover, forage, and roads are important to meeting big game objectives.

F2 All land delineated as the **Mill Creek Municipal Watershed** managed to maintain existing water quality and quantity. Activities are restricted. Timber harvest and other vegetation management are not permitted.

F3 The **High Ridge Evaluation Area,** of the Umatilla National Forest Barometer Watershed, is managed as an administrative study area to evaluate effects of timber harvesting activities on water quality and streamflow regimes. Other development activities are curtailed.

F4 North and south forks of the **Walla Walla River watershed** emphasizes providing high quality and quantity of water, big game, and other wildlife habitat while sustaining or enhancing other resource values. On most of the watershed, timber harvest is not scheduled and roads are not allowed.

UMATILLA
NATIONAL FOREST
OLD GROWTH AREAS

FINAL
ENVIRONMENTAL IMPACT STATEMENT

FOR THE
LAND AND RESOURCE MANAGEMENT PLAN

MARCH 1990

LEGEND

- DEDICATED SUITABLE OLD GROWTH
- DEDICATED CAPABLE OLD GROWTH
- OTHER INVENTORIED OLD GROWTH

INDEX TO GEOLOGICAL SURVEY TOPOGRAPHIC MAPS

KEY MAP

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
JOHN R. McGUIRE, CHIEF

UMATILLA NATIONAL FOREST
OREGON AND WASHINGTON
BOISE AND WILLAMETTE MERIDIANS
1959

LEGEND

1977