7. Maximum Big-Game Benchmark

a. Description

This benchmark is formulated to optimize the cover/forage ratio for big game on both summer and winter ranges and to sustain optimum habitat conditions. In developing the assortment of benchmarks for FORPLAN analysis, certain assumptions were used to estimate outputs and tradeoffs. The maximum big-game benchmark was developed under the concept that optimum big-game habitat conditions, and specifically cover to forage ratios, could be estimated outside of the FORPLAN model structure.

Public response to the Draft Environmental Impact Statement have indicated that the Habitat Effectiveness Index model would be more appropriate for use in determining habitat conditions for big-game. Consequently, the changes made between Draft and Final Environmental Impact Statements for estimating big-game habitat conditions have made direct comparisons between benchmarks and alternatives difficult.

b Purpose

The purpose of this benchmark is to show the opportunity costs of maintaining optimum big-game cover and other Management Requirements in terms of Present Net Value and output levels.

c FORPLAN Objective Function

Maximize Present Net Value for 15 decades.

d. Assumptions and Constraints

No timber harvest in mature and commercial-thin ponderosa pine stands for the first three decades. Harvest in the two-story ponderosa pine limited to high stocking level prescriptions and final harvest stands only. At least 60 percent of all working groups must be 60+ years old from decades 4 through 15

Timber harvest is scheduled only on lands classified as "suitable" through the suitability analysis.

Management Requirements are constraints

Nondeclining evenflow at or below long-term sustained yield capacity

Rotations based on 95 percent of culmination of mean annual increment.

Ending inventory constraint applied

Only the benefits and variable costs associated with the timber and livestock outputs are considered.

Selection harvest only in riparian areas (except lodgepole pine) in order to meet water quality (temperature) standards and other riparian area resource needs.

Old-growth acres (44,860) necessary to maintain viable wildlife populations removed from land base available for timber harvest.

Harvest dispersion constraints:

(1) Less than or equal to 25 percent per decade of mixed conifer and ponderosa pine in riparian areas;

(2) Less than or equal to 10 percent per decade of lodgepole pine in riparian areas;

(3) Less than or equal to 38 percent per decade on all other available lands for shelterwood final harvests;

(4) Less than or equal to 25 percent per decade on all other available lands for clearcut final harvests

All constraints (unless otherwise specified) are applicable throughout the planning horizon (150 years).

e. Present Net Value

The Present Net Value reduction (FORPLAN) due to imposition of the set of constraints (when compared to Benchmark 3) is $181.4 million.

f Timber

This benchmark run produced a long-term sustained yield capacity of 52 6 million cubic feet per year with a first decade harvest volume of 50.3 million cubic feet per year (275.1 million board feet per year) There is an additional volume of approximately 4 7 million cubic feet per year (14 1 million board feet per year) because of mortality salvage and nonchargeable timber volume This total volume substantially exceeds the volume production goals for the Malheur National Forest called for in the "Forestry Program for Oregon" in all five decades See Table B-19 for volume of timber harvest by decade

The species mix for the first three decades is approximately 60 percent ponderosa pine and 40 percent mixed conifer Decades four and five will produce a species mix of 70 percent mixed conifer species and 30 percent ponderosa pine. See Figure B-37 for the harvest methods used to achieve these volumes by decades. In addition, there is an average forest residue potential of 38 0 million cubic feet per year produced over the planning period. (See Figure B-38)

To achieve the projected harvest volumes, there will be an increase in precommercial thinning and planting acres over the 50-year period. General trends indicate high levels of precommercial thinning in the first three decades with decreasing levels in decades four and five A significant increase in reforestation (planting) acres occurs in the last two decades of the planning period See Figures B-39 and B-40 for precommercial thinning and planting acres.

g. Range Management

On forested and nonforested land, a major decrease in livestock animal unit months occurs. On forested land, a decrease of 90 percent occurs in the first decade The levels then remain constant through decades 2 through 5 (See Figure B-41)

In Decade 1 on nonforested land, a decrease of 90 percent occurs The levels then increase slightly in the second decade and then remain constant through the fifth decade.

FIGURE B-37
HARVEST METHODS

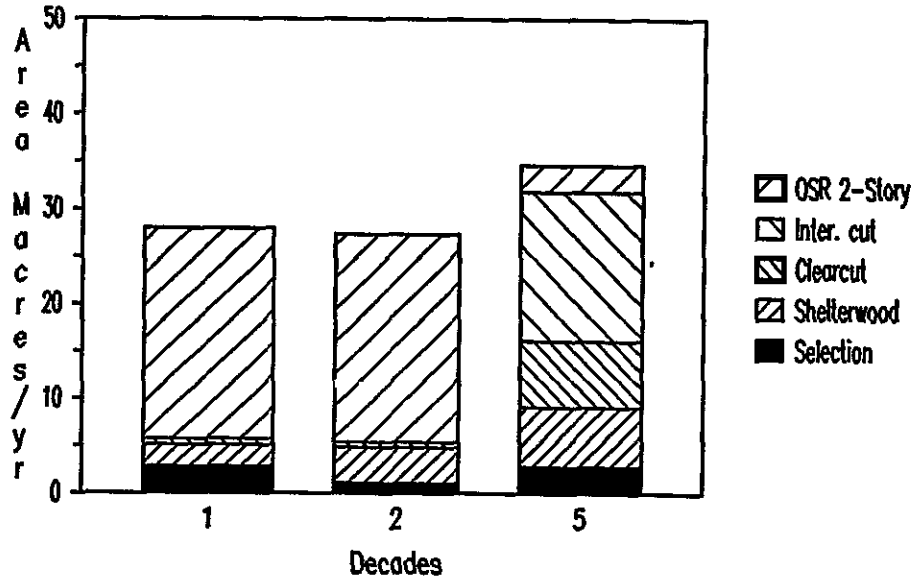


FIGURE B-38
OTHER WOOD FIBER AND PERSONAL USE FIREWOOD

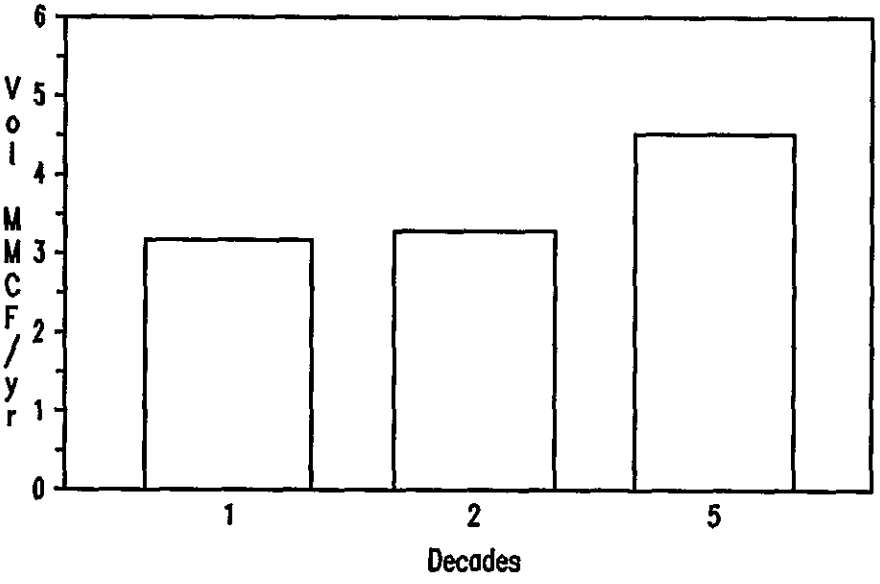


FIGURE B-39
PRECOMMERCIAL THINNING

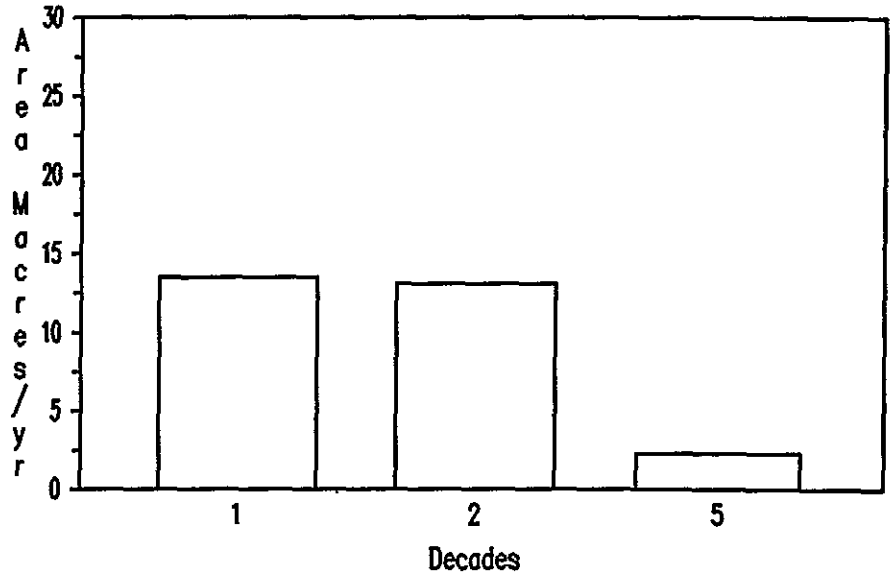


FIGURE B-40
REFORESTATION (PLANTING)

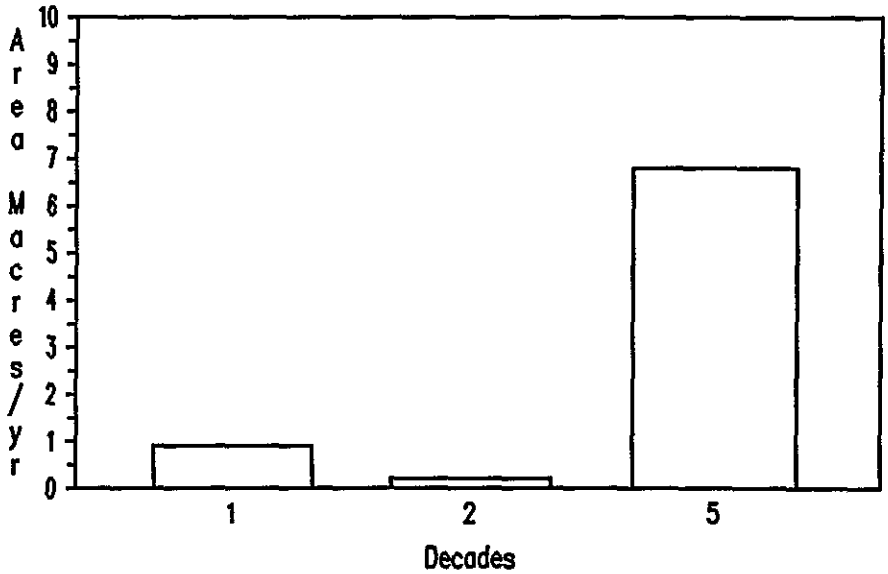
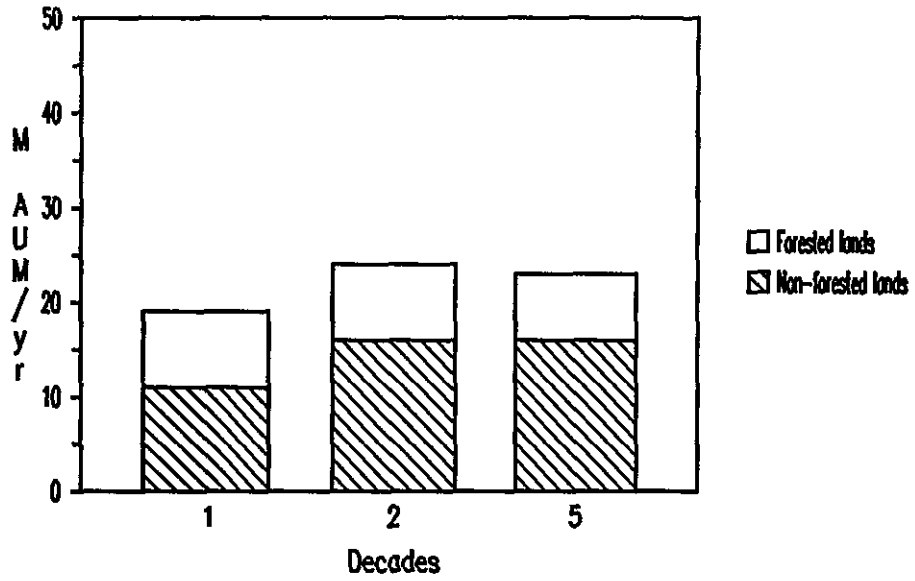


FIGURE B-41
LIVESTOCK



h. Wildlife

Big-game habitat shows a net increase toward optimum cover/forage ratios by the fifth decade, with the greatest improvement occurring between decades four and five (Figure B-43).

Estimated elk numbers (per forage capability) on both winter and summer ranges initially decline then increase slightly in later decades (Figure B-42) Elk numbers were estimated by forage availability and a discount for less than optimum cover conditions only. No other factors such as hunting, predation, roading, weather, etc., were used to estimate the hypothetical population capacity of this benchmark.

i Old Growth

Old growth acres will fall steadily through the fifth decade to the Management Requirement level of 44,860 acres.

j. Fisheries

This run has constraints on it which are intended to meet Management Requirements. In terms of water quality and fish habitat, the constraints which are most important are those which specify selection harvest in riparian areas and cause the harvest to be more or less evenly distributed over time. These constraints are primarily aimed at temperature regulation. The natural contribution of large organic debris to the streams would continue to decline over time.

Within the limits of our ability to predict changes on such a broad scale, it appears that this run is at least close to providing for shading requirements. On-the-ground implementation of this prescription could probably make the necessary adjustments to meet shade requirements from the perspective of timber management Timber harvest in riparian areas would nearly double that of the current situation The emphasis on analysis and coordination of project planning would be even greater under this management scenario than currently Best Management Practices for timber harvest activities, including roading, will meet State water quality standards for sediment and turbidity

The number of animal unit months produced by this benchmark is much lower than current levels because the forage produced is assigned to big game The expected fisheries output for the benchmark is the same as that for Benchmark 11, Maximum Present Net Value Because it is not practicable to redistribute big-game use away from riparian areas, however, impacts to riparian vegetation could be great It could be necessary to increase streamside and instream work to maintain fishery habitat conditions at current levels

External funding for fish habitat improvement projects (such as the Bonneville Power Administration anadromous fish program) could continue to the extent that such investments were consistent with other ongoing management. Actual fish habitat condition could improve in proportion to the amount of external funding, with the upper limit of potential improvement slightly less than the maximum potential of the current situation

k Water

See summary analysis, Section VI C 10 d.

FIGURE B-42
ESTIMATED ELK NUMBERS (per forage availability)

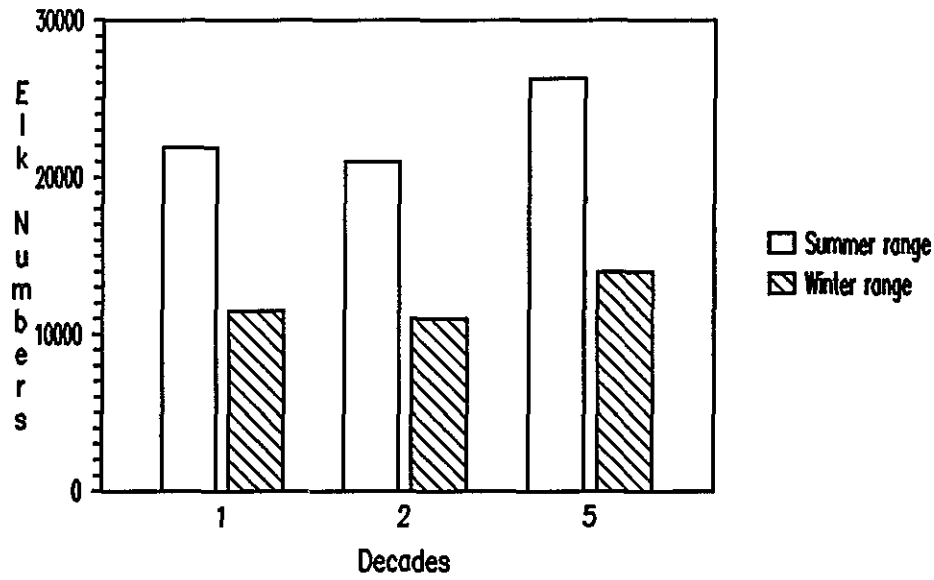
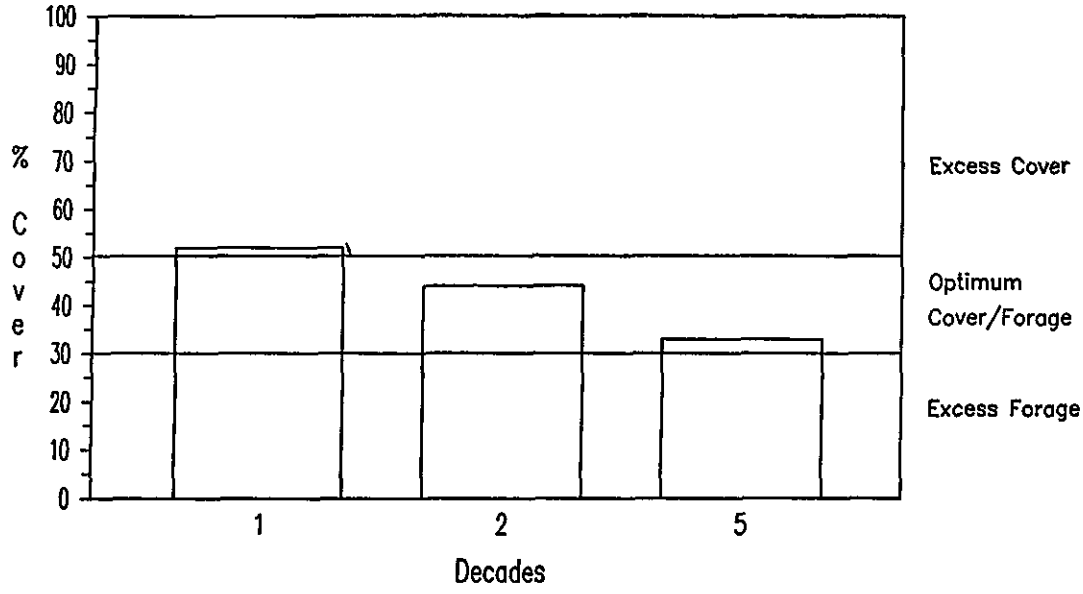


FIGURE B-43
BIG-GAME HABITAT CAPABILITY



Cover in the above figure refers to an undefined combination of satisfactory and marginal cover categories

1. Recreation

Developed Recreation: Developed recreation opportunities would be provided through the maintenance of existing facilities. Demand for developed recreation would be met through the fifth decade.

Dispersed Recreation: Semiprimitive recreation opportunities outside wilderness would be eliminated by the first decade. This benchmark would provide only roaded modified and wilderness semiprimitive nonmotorized opportunities.

Visual Resource: No provisions for visual resource management would be made By the end of the first decade the only natural-appearing landscapes remaining would be those in wilderness.

Cultural Resource: Cultural resources will be inventoried prior to the implementation of potentially impacting management activities The number of acres managed for cultural resource values is primarily influenced by the acres of timber to be harvested annually New acres will accumulate until all lands suitable for timber production have been surveyed and cultural resources located Thereafter, new cultural resource management acres will continue to accrue as other Forest acres are examined.

m. Transportation

Arterial and collector road construction and reconstruction will remain constant over time. The reason for this is the dispersion of harvest and recreational activities across the Forest This assumption of a constant program also applies to maintenance levels 1, 3, 4, and 5 of the road maintenance program. Since local roads are usually used by only high-clearance vehicles, they fall into the maintenance level 2 which will change over time.

The local road system construction and reconstruction program also varies over time. This is shown in Figure B-44 This graph shows only a small variation over the planning period.

n. Protection

The cost of protection (dollars per million acres protected) will not vary by benchmark or alternative Eighteen protection alternatives were run through the Fire Management Analysis process and the most cost-efficient alternative was selected. Differences in benchmarks or alternatives will probably have no measurable effect on the Fire Management Effectiveness level selected

Method of Measurement: Fire Management Effectiveness is measured by adding appropriated Forest Fire Protection dollars to Emergency Firefighting costs and resource loss values. Program Effectiveness is computed by averaging the annual cost over a decade.

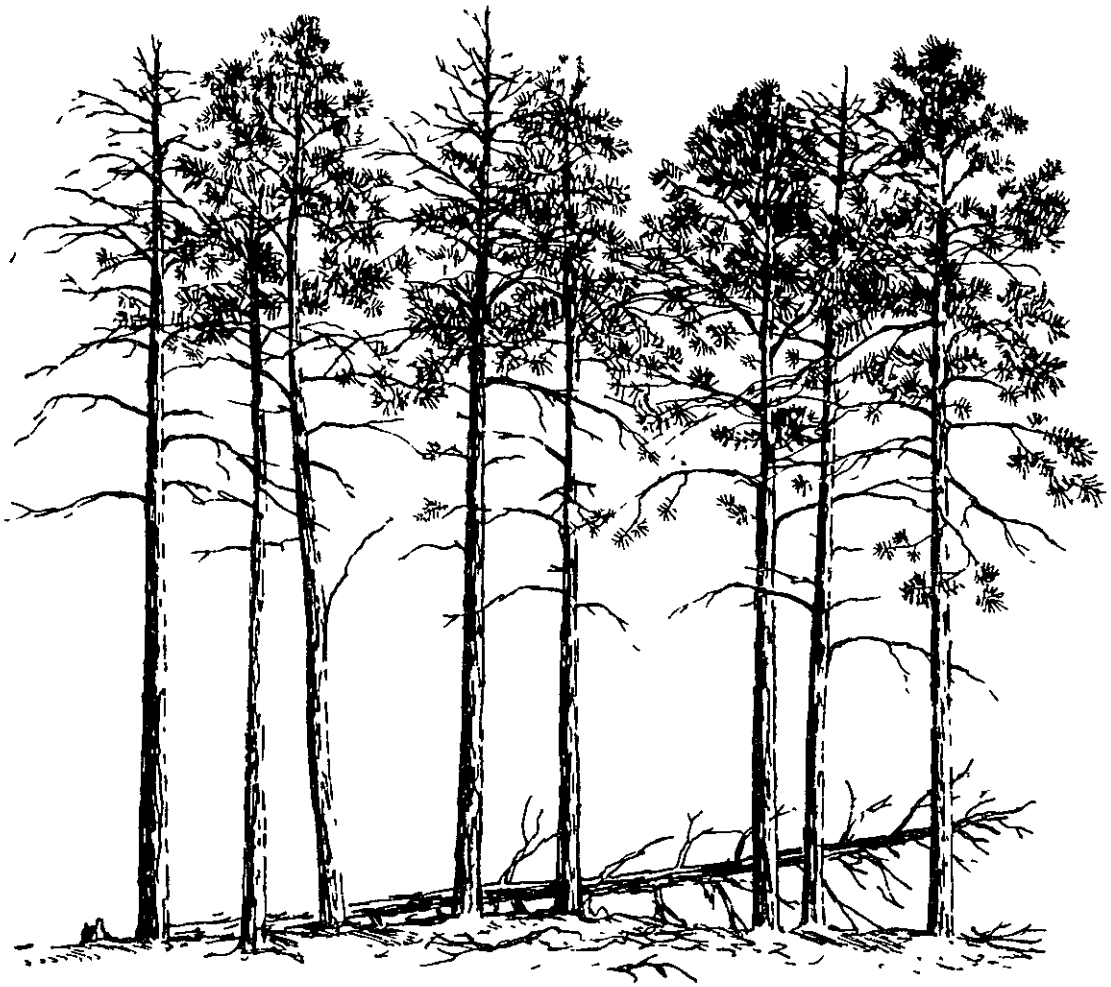


TABLE B-19

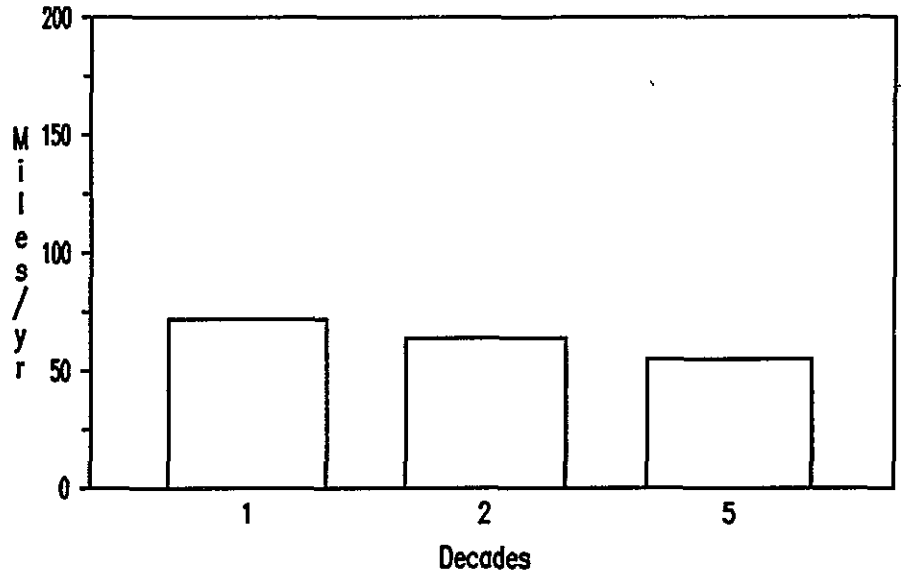
BENCHMARK MAX BIG GAME WITH MRs

OUTPUT/EFFECT Output/Effect	Unit of Measure/yr.	1st Decade	2nd Decade	5th Decade
RECREATION				
Developed Use	M RVDs	132.1	138.0	138.0
Dispersed Use				
Semi-Primitive				
Non-Motorized	M RVDs	0	0	0
Semi-Primitive				
Motorized	M RVDs	0	0	0
Roaded Natural	M RVDs	1,949	976.1	0
Roaded Modified	M RVDs	1,542	2,633	3,294.4
Wilderness	M RVDs	61.8	61.8	61 8
WILDLIFE AND FISH				
Elk (Summer)	Numbers	21,900	21,000	26,300
Anadromous Fish	M Pounds	32.1	32.1	32.1
Big-Game Use[1/]	M WFUDs	168.3	162.4	194 7
Fish Use[1/]	M WFUDs	23.7	23 7	23 7
RANGE				
Livestock Use	M AUMs	18.6	23 7	23 1
TIMBER				
LTSYC	MM Cu Ft	---------- 52.6 in Decade 15 ----------		
Programmed Sale	MM Bd Ft	275.1	N/A	N/A
Offered[2/]	MM Cu Ft	50.3	50.3	50 3
Other wood fiber and				
Personal firewood	MM Cu Ft	3.17	3.29	4.52
Volume by species				
Ponderosa Pine	MM Cu Ft	28 6	27.6	13 5
Mixed Conifer	MM Cu Ft	16 6	17.5	31 8
Lodgepole Pine	MM Cu Ft	0 4	0.5	0.3
Harvest Method				
Overstory Removal/				
Two-story stand	M Acres	22.2	21 9	2 8
Intermediate cut	M Acres	0	0	15.7
Clearcut	M Acres	0 6	0.6	7.0
Shelterwood cut	M Acres	2.3	3 8	6 3
Selective cut	M Acres	2 8	1.0	2.8
Precommercial thin	M Acres	13 5	13.1	2.3
Reforestation (Plant)	M Acres	0 9	0.2	6.8
WATER QUALITY				
Sediment	Index	N/A	N/A	N/A
Water Yield	M Acre Feet	620	620	620
FIRE				
Fire Effective Index	$/M Acres	1,344	1,344	1,344
Fuel Treatment	M Acres	32 5	32.9	30.7
FACILITIES				
Passenger Car	Miles	1,472	1,472	1,472
High-Clearance Vehicle	Miles	2,771	2,771	2,771
Construction				
and Reconstruction	Miles	72	64	55

1/Included in recreation visitor days in recreation.

2/Includes 4.7 million cubic feet per year salvage

FIGURE B-44
LOCAL ROAD CONSTRUCTION/RECONSTRUCTION



8. Maximum Anadromous Fish Benchmark

a Description	This benchmark estimates the maximum anadromous fish production that could be attained on the Forest, subject to Management Requirements and continued management of other resources
b. Purpose	The purpose of this benchmark is to estimate the maximum level of anadromous fish that the Forest could provide
c. FORPLAN Objective Function	This benchmark is developed outside the FORPLAN model.
d Assumptions and Constraints	It is assumed the Izee Falls passage project on the South Fork of the John Day River will be completed by 1990. Therefore, there will be a total of 280 miles of anadromous fish habitat on the Forest. In addition to the standard riparian area constraints on timber management, two trees per acre each 40 years (minimum 20 inches diameter at breast height) in riparian anadromous areas are dedicated to fisheries. These are to provide additional large organic debris for instream structure to improve pool/riffle ratios. They may be left to fall naturally into the stream or be physically placed there to meet fisheries management objectives.