

APPENDIX B

APPENDIX B

DETERMINATION OF LANDS SUITABLE FOR TIMBER PRODUCTION

The identification of suitable lands was completed using criteria provided in 36 CFR 219.14.

Suitable lands needed for timber production under the proposed alternative total 581,550 acres. The following table compares the land-use components of the previous plan with equivalent areas of suitable land in the proposed action alternative.

The Forests' previous timber management plans were approved in 1962 and based upon forest inventory data collected in 1958. Much of the information provided by our recent inventory (completed in 1980) is not comparable to the older data because analysis procedures have changed dramatically over the last 22 years.

Timber size and age class distributions and volume determinations reflect acreage corrections based on field checks of inventory data not previously available.

Maps displaying the location of lands suitable for timber production are available for review and inspection at the Forest Supervisor's Headquarters in Pueblo, Colorado.

TABLE B-1

LANDS AVAILABLE AND SUITABLE FOR TIMBER PRODUCTION

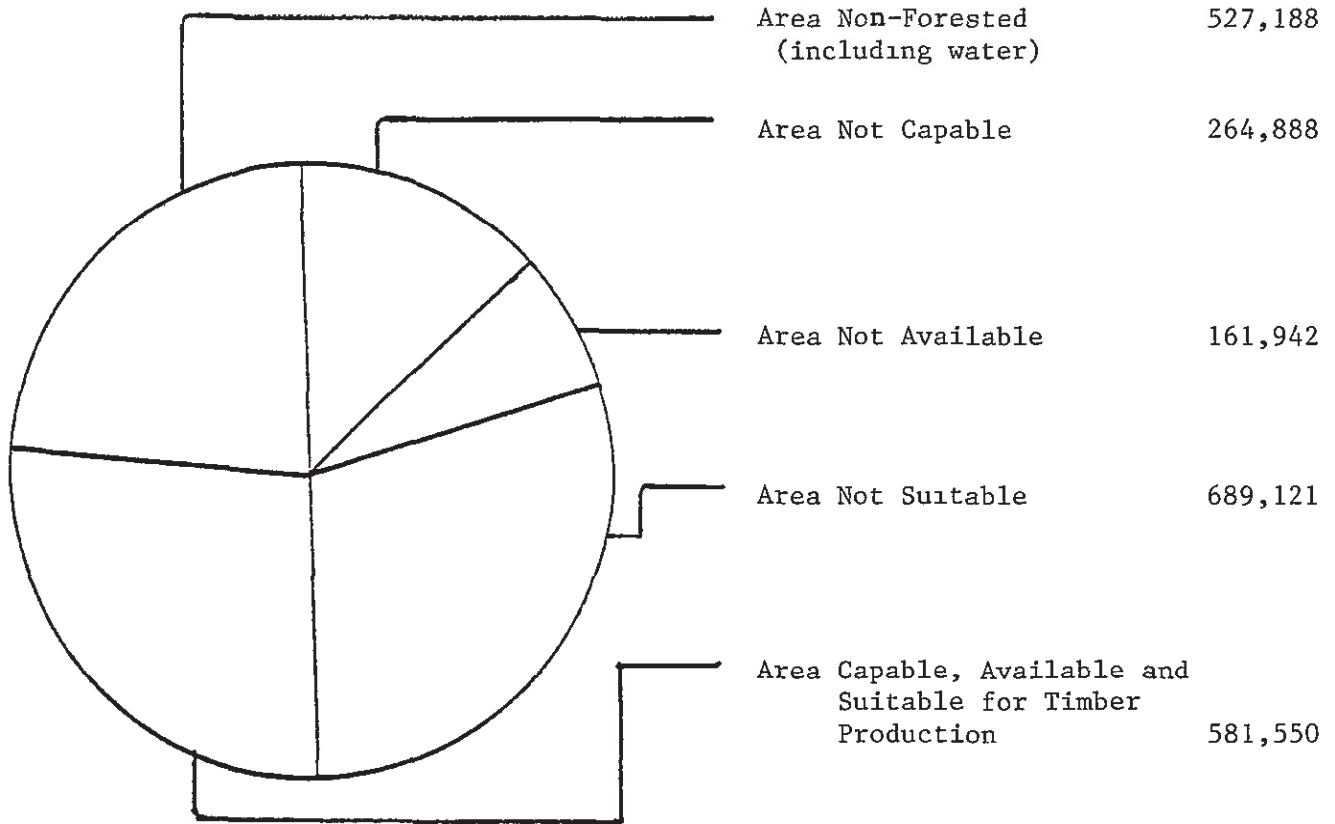
<u>Criterion</u>	<u>Classification</u>	<u>Acres</u>
	Net National Forest Ownership*	2,224,689
	Water	9,845
	Nonforest Land	517,343
	Forest Land	1,697,501
	A. Nonproductive/uneconomical (Less than 20 CF/Ac/Yr)	264,888
Legislatively or Administratively Withdrawn	B. Productive but not Available	
	1. Reserved	
	Wilderness	130,302
	Wild and Scenic Rivers	0
	Natural Areas	790
	Special Areas	0
	2. Deferred	
	Wilderness Study Areas	
	-designated by Congress	102,700
	-designated by Administration	18,600
	C. Productive and Available but not Suitable	
Lack of Technology	1. Technologically Not Suitable	
	Irreversible Soil or Water- shed Damage	69,976
	Five Year Regeneration (Rocky)	27,824
Administrative Allocation	2. Administratively Not Suitable	
	Experimental Forest	12,418
	Administrative Sites	4,783
	D. Tentatively Suitable Land	1,065,220

*Pike and San Isabel National Forest Units only. The Comanche and Cimarron National Grasslands are excluded from this summary because they contain no suitable forest land.

FIGURE B-1

LANDS SUITABLE FOR TIMBER PRODUCTION

Total National Forest Area*(Net) 2,224,689



* Includes only Pike and San Isabel National Forests. Does not include the Comanche or Cimarron National Grasslands.

DEFINITIONS FOR TERMS ON PAGE B-2

Net National Forest Ownership: The acreage of Federal lands which have been designated by Executive Order or statute as National Forest, National Grasslands, or Purchase Units.

Water: Streams, sloughs, estuaries, and canals 120 feet or more in width; and lakes, reservoirs, and ponds more than one acre in area.

Nonforest Land: Land that has never supported forests and lands formerly forested where use for timber utilization is precluded by development for other use. Includes areas used for crops, improved pasture, residential areas, improved roads of any width and adjoining clearings, and powerline clearing of any width. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide, and clearing more than one acre in size to qualify as nonforest land. The nonforest land is classified as land not suited for timber production.

Forest Land: Land at least 10 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Nonproductive Forest Land: Forest land which is not capable of growing industrial crops of wood at a growth potential of 20 cubic feet per acre annually. Nonproductive forest land is not suited for timber production.

Productive Forest Land: Forest land which is capable of growing industrial crops of wood at or above 20 cubic feet per acre per year. This classification includes both accessible and inaccessible, stocked and nonstocked land.

Unavailable Forest Land-Deferred: Productive forest land which has been withdrawn from timber production by the Secretary or Chief of the Forest Service. Productive but not available forest land is classed as not suited for timber production.

Unavailable Forest Land-Reserved: Productive forest land which has been legislatively withdrawn or administratively withdrawn from timber production on a permanent basis. Examples of this classification are Wilderness Areas, Primitive Areas, Research Natural Areas or special interest areas or similar formal withdrawals approved by the Chief or higher authority.

Productive And Available: Productive forest land which has not been legislatively withdrawn or administratively withdrawn from timber production by the Secretary or the Chief of the Forest Service. This classification includes RARE II Further Planning Areas and administrative designation below the Chief's level withdrawing land from timber production.

Technologically Not Suitable/Irreversible Resource Damage: Forest land that is productive and available for timber production but technology is not available that will ensure timber production, including harvesting, from the land without irreversible resource damage to soil productivity or watershed condition. Availability of technology is judged on whether technology is currently developed and available for use. This is not an economic test, and the technology does not have to be available in the local area.

Technologically Not Suitable/Over Five-Year Regeneration: Forest land that is productive and available for timber production but where there is not reasonable assurance that such lands can be adequately restocked within 5 years after final harvest. The five year regeneration requirement does not apply in areas managed to promote non-timber resource values.

Administratively Not Suitable: Forest land that is productive and available but is not organized for timber production under sustained yield principles because of long-term allocations made prior to this planning effort. Some timber may be cut from these areas but it will generally be a by-product of some other management activity. Experimental Forest and developed recreation sites are normally included in this component.

Productive, Available And Tentatively Suitable Forest Land: Productive forest land that has not been legislatively or administratively withdrawn and is physically suited for timber production.

TABLE B-2

COMPARISON WITH PREVIOUS PLAN (1962)

	1962 PLAN ACRES	THIS PLAN ACRES	PERCENT 1/ CHANGE (%)
<u>AREA SUMMARY</u>			
Net National Forest	2,182,795	2,224,689	+ 2%
Total Forested Land	1,713,358	1,697,501	- 1%
Total Productive Forest Land	1,457,040	1,432,613 <u>2/</u>	- 1%
Total Comm. Forest Land	1,210,818	1,180,221 <u>3/</u>	- 3%
Total Nonproductive	256,318	264,888 <u>4/</u>	+ 3%
Total Nonforest (including water)	469,437	527,188	+11%

1/ Percent change from Previous Plan2/ Productive forest land3/ Available productive forest land (Does not include Productive Reserved or Deferred as displayed below)4/ Nonproductive forest land (uneconomical)

<u>PRODUCTIVE FOREST LAND</u>	<u>Acres</u>	<u>Acres</u>	<u>% Change</u>
<u>NOT AVAILABLE</u>			
Productive Reserved	6,890	131,092	+1,803%
Productive Deferred	239,332	121,300	- 49%

PREVIOUS PLAN
Commercial Forest Land

THIS PLAN
Tentatively Suitable
Forest Land*

	<u>Acres</u>	<u>By Use Category</u>	<u>Acres</u>
Standard	234,917	Operable Slopes (0-40%)	769,948
Special	388,674 <u>5/</u>	Steep Slopes (40-70%)	241,272
		Riparian	0
		Esthetic Retention	54,000 <u>7/</u>
		Wildlife Retention	0
		Bear Habitat	0
Marginal	441,060 <u>6/</u>		
Unregulated	146,167		
Total	1,210,818		1,065,220

5/ Includes water and travel influence zones6/ Includes areas with high road development costs and a lack of suitable logging methods for steep slopes (>40%)7/ All of this area is on operable slopes (0-40%)

* See following chart for description of lands unsuitable for timber production.

PRODUCTIVE FOREST LAND - NOT SUITED FOR TIMBER PRODUCTION

	PREVIOUS PLAN ACRES	THIS PLAN ACRES
<u>TECHNOLOGICALLY NOT SUITED</u>		
Logging (Slopes Over 70%)	NA*	69,976
Excessive Surface Rock	0	27,824
<u>OTHER BASIS FOR PRODUCTIVE FOREST LANDS NOT SUITED FOR TIMBER PRODUCTION</u>		
Developed Recreation Sites	NA	2,520
Experimental Forests	12,418	12,418 <u>1/</u>
Administrative Sites	NA	2,263
National Recreation Areas	0	0
Back Country	0	0
Endangered Species	0	0
Esthetic Management	0	0
Wildlife Retention	0	0
Wildlife Maintenance	0	0
Market Not Available (Aspen)	133,749	0
Isolated	0	0
High Development Costs	0	0
Suitable Lands Surplus to Timber Production Needs		368,669 <u>2/</u>
Total Unsuitable	<u>146,167</u>	<u>483,670</u>
Total Suitable Lands		581,550

COMPARISON OF TIMBER CHARACTERISTICS

<u>TIMBER SIZE CLASS</u>	COMMERCIAL FOREST ACRES	SUITABLE FOREST ACRES <u>3/</u>	PERCENT CHANGE
Old Growth Sawtimber <u>4/</u>	NA	175,941	
Sawtimber (Other)	877,093	445,372	- 49%
Poletimber	495,350	240,839	- 52%
Seed/Sapling	58,167	93,683	+ 61%
Understocked	19,540	109,385	+560%
Nonstocked	0	0	0

1/ Includes productive forest land within Manitou Experimental Forest.

2/ Includes much of the productive forest land on steep slopes (40-70%) and any productive forest land recommended for wilderness classification by the alternative.

3/ Includes productive forest land which is surplus to timber production needs.

4/ Old growth is considered to be 150 years and over for Western National Forests.

* NA = Data not available.

Table B-2 Continued

	PREVIOUS PLAN COMMERCIAL FOREST ACRES	THIS PLAN SUITABLE* FOREST ACRES
<u>FOREST TYPE BY AGE GROUP</u>		
Old Growth (150 yr. +)		
Douglas-fir/White Fir	NA	55,117
Ponderosa Pine	NA	28,723
Lodgepole Pine	NA	5,781
Spruce/Fir	NA	84,529
Aspen	NA	1,791
TOTAL	NA	175,941
Younger Growth		
Douglas-fir/White Fir	333,000	293,797
Ponderosa Pine	341,000	179,843
Lodgepole Pine	193,000	138,748
Spruce/Fir	405,000	150,974
Aspen	178,000	125,917
TOTAL	1,450,000	887,584
GRAND TOTAL	1,450,000	1,065,220
<u>SITE CLASS (Based on Potential Annual Growth)</u>		
20-50 Cf/Ac/Yr	NA	809,971
50-85	NA	255,249
85-120	NA	0
120+	NA	0
<u>AREA OF UNDERSTOCKED BY SITE CLASS</u>		
		<u>All Forest Land</u>
20 Cf/Ac/Yr	NA	NA
20-50	NA	103,849
50-85	NA	5,536
85-120	NA	0
120+	NA	0
<u>AREA BY CONDITION CLASS</u>		
Overstocked	NA	315,339
Full Stocking	143,000	59,982
Medium Stocking	474,000	488,547
Poor Stocking	634,000	91,967
Understocked	20,000	109,385
<u>AREA PUT UNDER MANAGEMENT BY TYPE (Planned)</u>		
Douglas-fir/White Fir	6,900	36,000
Ponderosa Pine	15,000	25,500
Lodgepole Pine	22,000	15,100
Spruce/Fir	19,500	14,600
Aspen	Unregulated	3,700

* Including suitable forest land that is surplus to timber production needs.

Table B-2 Continued

	THIS PLAN ON TENTATIVELY SUITABLE FOREST LAND <u>1/</u>	
	<u>Total</u> <u>Volume</u>	<u>Per</u> <u>Acre</u> <u>2/</u>
<u>VOLUME COMPARISON 3/</u>		
Growing Stock (G.S.) MMCF	1375	1.25
Salvable Dead MMCF	160	0.15
TOTAL CUBIC VOLUME	1535	1.40
Sawtbr. G.S. MMCF	986	0.90
Sawtbr. G.S. MMBF Scribner	3376	3.08
Sawtbr. G.S. MMBF INT. $\frac{3}{4}$ "	4112	3.75
<u>GROWING STOCK BY STAND SIZE</u>		
Old Growth Sawtbr. MMCF	312	1.72
Younger Sawtbr. MMCF	674	1.47
Poletimber MMCF	330	1.34
Seedling/Sapling MMCF	27	0.28
Understocked MMCF	32	0.28
Old Growth Sawtbr. MMBF Scribner <u>4/</u>	1068	5.89
Younger Wastbr. MMBF Scribner <u>4/</u>	1680	3.66
<u>SAWTIMBER GROWING STOCK BY TYPE 3/</u>		
Douglas-fir MMBF Scribner	1030	2.86
Ponderosa Pine MMBF Scribner	549	2.55
Spruce/Fir MMBF Scribner	1282	5.28
Lodgepole Pine MMBF Scribner	416	2.83
Aspen MMBF Scribner	98	0.74
<u>POLE TIMBER GROWING STOCK BY TYPE 5/</u>		
Douglas-fir MMCF	150	0.50
Ponserosa Pine MMCF	27	0.16
Spruce/Fir MMCF	129	0.64
Lodgepole Pine MMCF	161	1.18
Aspen MMCF	77	1.03
<u>GROWTH AND MORTALITY ON CFL</u>		
Annual Net Growth MMCF	28.76	26.2
Annual Mortality MMCF	3.22	3.0
Annual Gross Growth MMCF	31.98	29.2

1/ Including tentatively suitable forest land that is surplus to timber production needs.

2/ Per acre values are MCF or MBF

3/ Sawtimber growing-stock trees occur in stands of all size classes. Therefore, the "total volume" and "per acre" values pertain to total sawtimber growing-stock volumes for all tentatively suitable forest land (regardless of calculated stand size).

4/ Volumes for sawtimber size class only (does not include sawtimber growing stock in the poletimber, seedling/sapling or understocked size classes).

5/ Volumes of pole-sized growing stock (5-9" DBH) for tentatively suitable forest land assigned to the sawtimber and poletimber size classes (does not include poletimber growing stock in the seedling/sapling and understocked size classes).

Table B-2 Continued

THIS PLAN ON TENTATIVELY SUITABLE FOREST LAND		
	<u>Total</u> <u>Volume</u>	<u>Per</u> <u>Acre</u>
<u>ANNUAL GROWING STOCK GROWTH</u>		
<u>BY STAND SIZE (Net) 1/</u>		
Sawtimber - MMCF	14.87	23.21
Sawtimber MMBF Scribner	62.13	97.00
Poletimber MMCF 2/	7.81	31.67
Seed/Sapling MMCF 2/	3.06	31.67
<u>ANNUAL GROWING STOCK MORTALITY</u>		
<u>BY STAND SIZE</u>		
Sawtimber - MMCF	6.78	21.64
Sawtimber MMBF Scribner	6.28	9.81
Poletimber MMCF 2/	0.52	2.12
Seed/Saplings MMCF 2/	0.20	2.12
<u>ANNUAL GROWTH BY FOREST TYPE (Net) 3/</u>		
Douglas-fir MMCF	6.78	21.64
Ponderosa Pine MMCF	2.64	15.17
Spruce/Fir MMCF	6.68	29.73
Lodgepole Pine MMCF	6.23	42.68
Aspen MMCF	3.21	25.69
<u>ANNUAL MORTALITY BY FOREST TYPE 3/</u>		
Douglas-fir MMCF	0.88	2.80
Ponderosa Pine MMCF	0.62	3.54
Spruce/Fir MMCF	0.81	3.59
Lodgepole Pine MMCF	0.27	1.82
Aspen MMCF	0.29	2.36

- 1/ Growing stock used for growth calculations are trees 5" DBH and greater.
- 2/ Forest inventory data has growth information for poletimber and seedling/sapling size classes combined; therefore, they are shown with the same per acre value.
- 3/ Growth for growing stock in the sawtimber, poletimber and seedling/sapling size classes only (does not include understocked productive forest lands).

TABLE B-3

AREA SUMMARY BY FOREST TYPE AND SIZE CLASS
(Productive Forest Land In Acres)

<u>Forest Type and Stand Size Class</u>	<u>Previous TM Plan (1962)</u>	<u>Forest Plan (1982) 1/</u>	<u>Percent Change</u>
Douglas-fir/White fir			
Sawtimber	201,000	239,833	+19%
Poletimber	79,000	50,548	-36%
Seedlings/Saplings	-0-	10,695	+
Understocked	-0-	46,931	+
TOTAL	280,000	348,007	+24%
Ponderosa Pine			
Sawtimber	244,000	156,168	-36%
Poletimber	35,000	4,184	-88%
Seedlings/Saplings	3,000	4,840	+61%
Understocked	-0-	41,352	+
TOTAL	282,000	206,544	-27%
Lodgepole Pine			
Sawtimber	48,000	50,428	+ 5%
Poletimber	101,000	89,658	-13%
Seedlings/Saplings	13,000	12,012	- 8%
Understocked	-0-	831	+
TOTAL	162,000	152,929	- 7%
Spruce/Fir			
Sawtimber	236,000	151,115	-36%
Poletimber	81,000	44,042	-46%
Seedlings/Saplings	3,000	13,658	+355%
Understocked	17,000	13,731	-19%
TOTAL	337,000	222,546	-34%
Aspen			
Sawtimber	2,000	23,619	+1081%
Poletimber	119,000	52,554	- 56%
Seedlings/Saplings	29,000	52,478	+ 81%
Understocked	-0-	6,543	+
TOTAL	150,000	135,194	- 10%
Grand Total	1,211,000	1,065,220	- 12%

1/ Includes productive, available forest land surplus to timber production needs.

TABLE B-4

ALLOWABLE SALE QUANTITY AND ANNUAL RPA TARGET STATEMENT

PERIODIC ALLOWABLE SALE QUANTITY
Effective FY 85-94
From 10/1/84-9/30/94

ANNUAL RPA TARGET
Effective FY 81 - FY 85

TOTAL PROGRAM COMPONENT AND ACTIVITY	AREA ACRES	LARGE ROUNDWOOD (ST)		PRODUCTS 1/		TOTAL VOLUME MMCF	AREA ACRES	LARGE ROUNDWOOD (ST)		PRODUCTS 1/		TOTAL VOLUME	
		MMBF	MMCF	MMCF	CORDS			MMBF	MMCF	MMCF	CORDS	MMCF	MMBF 2/
FULL YIELD													
Regeneration													
Clearcut	26,600	132.0	41.0	8.2	82,000	49.2	160	1.2	.24	02	250	26	1.3
Seed Cut	52,300	86.9	27.0	5.4	54,000	32.4	3,350	7.2	1.68	17	2,125	1.85	8.3
Selection	16,000 4/	31.9	5.9	1.2	12,000	7.1	560	1.2	.28	03	375	31	1.3
Intermediate													
Prep Cut							560	1.2	.28	.03	375	31	1.3
Removal													
Commercial Thin	7,500	5.5	1.7	0.3	3,000	2.0	1,500	1.2	.25	03	375	28	1.3
Sub Total-Full Yield	102,400	256.3	75.6	15.1	151,000	90.7	6,130	12.0	2.73	28	3,500	3.01	13.5
Chargeable Allowable													
Sale Quantity	102,400	256.3	75.6	15.1	151,000	90.7	6,130	12.0	2.73	28	3,500	3.01	13.5
TOTAL	102,400	256.3	75.6	15.1	151,000 3/	90.7	6,130	12.0	2.73	.288	3,500 3/	3.01	13.5

1/ Convertible Products - Converted to cords at 100 cubic feet/cord for control purposes

2/ Includes Convertible Products

3/ This volume is available as topwood and cubic pole timber (5-7" DBH) These were not scheduled outputs and the figures are estimates only

4/ Selection harvest is an expensive method to plan and implement. The method is forecasted to actually be applied between 8,000 and 16,000 acres for the decade. Evaluation of its use will be evaluated periodically through the decade

TABLE B-5

ANNUAL ALLOWABLE SALE QUANTITY AND PROGRAMMED SALE STATEMENT

ANNUAL ALLOWABLE SALE QUANTITY From 10/1/84 - 9/30/94						PROGRAMMED SALE STATEMENT Fiscal Year 1983							
TOTAL PROGRAM COMPONENT AND ACTIVITY	AREA ACRES	LARGE ROUNDWOOD (ST)		PRODUCTS		TOTAL VOLUME	AREA	LARGE ROUNDWOOD (ST)		PRODUCTS		TOTAL VOLUME	
		MMBF	MMCF	MMCF	CORDS	MMCF		MMBF	MMCF	MMCF	CORDS	MMCF	MMBF <u>1/</u>
FULL YIELD													
Clearcut	2,660	13.2	4.1	82	8,200	4.9	1,848	15.30	2.95	0.30	3,750	3.25	17.18
Seed Cut	5,230	8.7	2.7	54	5,400	3.3	3,429	7.51	1.67	0.17	2,125	1.84	8.57
Selection	1,600 <u>3/</u>	3.2	0.6	.12	1,200	0.7							
Prep Cut													
Removal													
Commercial Thin	750	0.6	0.2	03	300	0.2	766	0.95	0.20	0.02	250	0.22	1.08
Sub-Total	10,240	25.7	7.6	1.51	15,100	9.1	6,043	23.76	4.82	0.49	6,125	5.31	26.83
Chargeable Allowable													
Sale Quantity	10,240	25.7	7.6	1.51	15,100	9.1	6,043	23.76	4.82	0.49	6,125	5.31	26.83
TOTAL ASQ	10,240	25.7	7.6	1.51	15,100 <u>1/</u>	9.1	6,043	23.76	4.82	0.49	6,135	5.31	26.82

PROGRAMMED FROM NON-SUITABLE (Non-Chargeable)

Clearcut	None
Seed Cut	None
Prep Cut	None
Removal	None
Commercial Thin	None
Sub-Total	None
Salvage (Unsuitable)	None

1/ Includes products converted to cords at 100 cubic feet/cord for control purposes2/ This volume is available as topwood and cubic pole timber (5-7" DBH) These were not scheduled outputs and the figures are estimates only3/ Selection harvest is an expensive method to plan and implement The method is forecasted to actually be applied to between 800 and 1,600 acres annually Use of the selection harvest system will be periodically evaluated as additional data and experience is gained

TABLE B-6

TIMBERLAND USE CLASSIFICATION AND INVENTORY SUMMARY

	ACRES M ACRES	VOLUME		TOTAL ANNUAL NET GROWTH		TOTAL ANNUAL MORTALITY	
		ALL PRODUCTS 5 0" + dbh MMCF	LARGE ROUNDWOOD 1/ Scribner MMBF	ALL PRODUCTS 5" + dbh MMCF	LARGE ROUNDWOOD 1/ Scribner MMBF	ALL PRODUCTS 5 0" + dbh MMCF	LARGE ROUNDWOOD 1/ Scribner MMBF
Water	9 85						
Non-Forest	517 34						
Forest Land	1,697.50						
A. Not Available	264.82	331.03	1,165.21	7.84	23 04	0 56	2.60
Productive Reserved	131 10	163.88	576 84	3 88	11 41	0.28	1 28
Productive Deferred	121 30	151.63	533 72	3 59	10 55	0 25	1 19
Productive Admin Withdrawn	12 42	15 52	54.65	0 37	1 08	0 03	0 13
B Not Suited for Timber							
Production	851.13	1060 28	3,732.17	25.11	73 80	1.77	8 30
Technologically Not Suited	97.80	122.25	430 32	2 89	8 51	0 21	0 96
Admin Not Suited	4 78	5.98	21 03	0 14	0 42	0 01	0 05
Economically Not Suited	264 89	(NONPRODUCTIVE FOREST LAND)					
Surplus to Tbr. Prod Needs	483 66	601 63	2,117.77	14 25	41.87	1 00	4 70
C Suitable for Tbr. Prod (CFL)	581.55	727 78	2,561 77	17.24	50.66	1.22	5 71
Full Yield	581.55	727.78	2,561 77	17.24	50 66	1.22	5 71
Modified Yield							
SUBTOTAL SUITABLE FOR TBR PROD	581.55	727 78	2,561 77	17 24	50 66	1 22	5 71
NATIONAL FOREST TOTAL	2,224.69	1,788 66 2/	6,296.05 2/	42 36 2/	124.50 2/	3.00 2/	14.02 2/

1/ Sawtimber volumes pertain to trees 9.0" DBH and greater (for which forest inventory data is available)

2/ These totals are for productive forest land only