

# ALASKA TIMBER HARVEST AND PRODUCTION, 1994 DRAFT REPORT

PREPARED FOR

United States Forest Service,  
Pacific Northwest Experiment Station,  
Forestry Sciences Laboratory

PREPARED BY

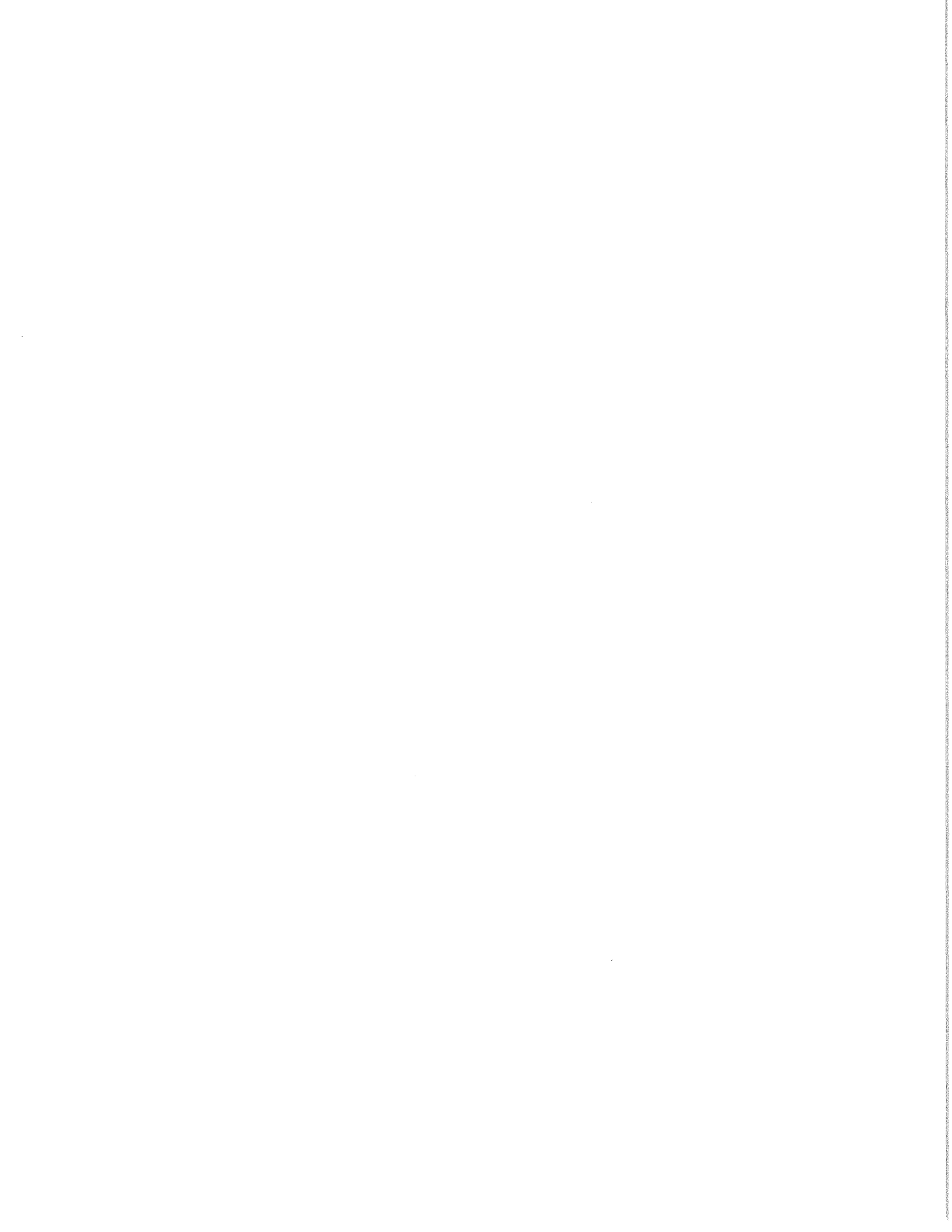
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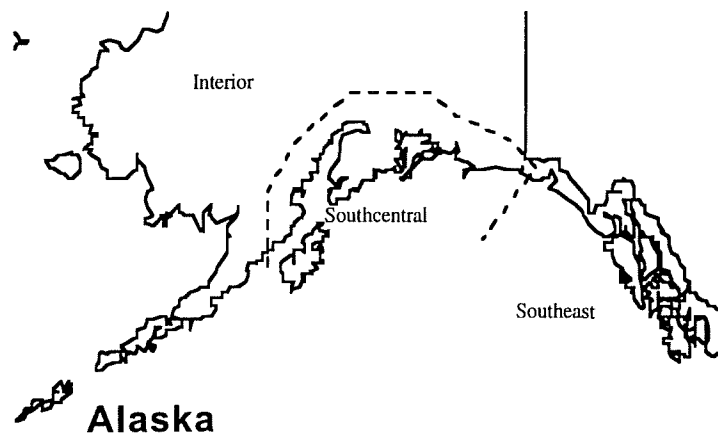
# Introduction

This report tries to provide regular and timely information about the timber and wood products industry. It includes data for the entire state and for three regions within the state, and brings together previously available data on public timber harvests and wood products exports, as well as new estimates of private timber harvests. We hope the data will be useful for both public and private planning efforts, as well as informed policy debate over timber management and development of the forest products industry.

## Alaska's Forests

Alaska's richest timber resource is its coastal forest, a narrow band of temperate rain forest extending from the southern border of the state north and west to Kodiak Island. Sitka spruce is a major component of this forest, with western hemlock in the southeastern area, replaced by mountain hemlock west of Prince William Sound. In the interior, white spruce, paper birch, quaking aspen and alder predominate on well drained sites, while black spruce and larch grow in wetter areas. There are long 'stringers' of potential commercial forest along the major rivers, but the bulk of the interior forest is too poorly stocked for commercial harvest<sup>1</sup>.

This report divides Alaska into three regions: southeast, southcentral coast, and interior. The southeastern region includes Alaska's panhandle, up to Yakutat Bay. All of the Tongass National Forest is on this region. The southcentral coast region continues along the Gulf of Alaska west from Yakutat Bay, across Prince William Sound, takes in the entire Kenai Peninsula, the coastal forest along the west side of Cook Inlet and the Kodiak archipelago. The Chugach National Forest lies completely within this region, and we have tried to include all the coastal forest areas and none of the interior type forest areas. There is, however, a small area of interior forest type, (the north west portion of the Kenai Peninsula) in this region. The Interior region includes the remainder of Alaska; in terms of timber harvests this means the commercially viable forests along the Yukon, Koyukuk, Tanana, Kuskokwim, Susitna and Copper Rivers.



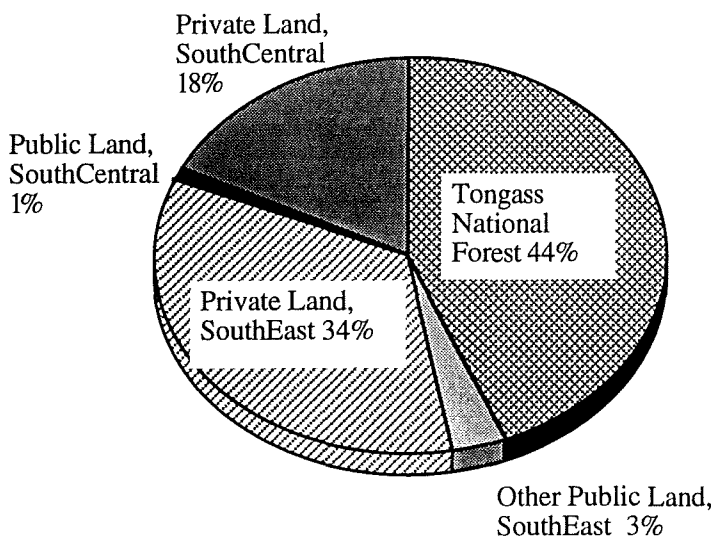
<sup>1</sup> Alaska's Forest Resources, Alaska Geographic Vol. 12 No. 2

# Alaska Timber Harvests

## Tongass National Forest

The Tongass National Forest, at 16.9 million acres, is the nation's largest national forest, and the largest single source of timber in the state. Since 1985, Tongass timber has accounted for 85 to 99 percent of all federal timber harvested in Alaska. The Forest Service sells timber through one long term contract (a second was canceled in April 94) and several short term contracts<sup>1</sup>. Timber harvest from the Tongass made up over thirty percent of the total state harvest in 1994 (see figure 1). Like all timber from federal lands, Tongass timber must go through primary wood processing before export. There is an exception for wood in excess of that needed by local processors, and up to 50 million board feet of cedar was exported to Canada annually from Forest Service lands over the last decade<sup>2</sup>. Much of the Tongass timber has historically gone to the pulp mills in Sitka and Ketchikan, although the percent and volume of Tongass timber processed in pulp mills has generally declined since the mid-eighties. The 1994 closure of Sitka's pulp mill and subsequent cancellation of Alaska Pulp's long term with the Forest Service means even less Tongass timber will become pulp in the future. Almost 60 percent of the 1994 Tongass timber harvest went through sawmills before export. This is up from 50 percent in 1993 and 30 to 40 percent in the late eighties. Exporters keep the required processing of these logs to a minimum and most are made into cants.

**Figure 1. Land Ownership of Southeast and Southcentral Alaska Timber Harvests, 1994**



## Other Federal Lands

The second largest component of federal forest land in Alaska is the Chugach National Forest, stretching from Cape Suckling west to the Kenai Peninsula, and also including part of Afognak Island. Harvest from the

Chugach is only a tiny fraction - about two percent in 1994- of that in the Tongass, and has varied over the last 10 years from .4 to 6.5 million board feet. In 1994, the Chugach National Forest harvest was 6.5 million board feet (MMBF). The Bureau of Indian Affairs owns land in southeast Alaska, and harvests from that land have ranged from 0 to 7.5 MMBF; and none was harvested in 1993 or 1994. The Bureau of Land Management (BLM) controls a variety of land throughout the state. Much of the harvest on BLM land is through free use permits (e.g., for firewood), although there is a small commercial harvest. The total harvest on BLM lands is less than 1 MMBF per year.

<sup>1</sup>Timber Supply and Demand 1994, Report #14, prepared by USDA Forest Service, Alaska Region, March 1995.

<sup>2</sup>USFS Region 10, spreadsheet AKHARV.wk1

## State of Alaska

Timber harvest on state owned lands in the last decade has varied from under 10 MMBF to over 25 MMBF. Unlike federal lands, where timber from the southeast dominates, interior harvests have made up a substantial percentage of state owned timber. Since 1985, interior harvests have ranged from 16 to 70 percent of total state harvest. The state owns a substantial amount of the commercial forest land in the Tanana Valley State Forest, which contains 1.8 million acres of land, and the Haines state forest, which contains a quarter million acres.

## Private Lands

The Alaska Native Claims Settlement Act granted substantial amounts of commercially viable forest land to native regional and village corporations. Native harvests comprise virtually the entire private timber harvest. Over the last decade native harvests have grown and Tongass harvests have declined, and since 1983 harvests on private land have exceeded those on federal land every year. As timber from private land is not subject to primary processing requirements, most of what is harvested are high quality logs which are exported as round logs. In 1994, private harvests totalled between 380 and 600 MMBF, depending on the method of estimation.

## Sources of Data for Private Harvests

For 1994, we report two numbers for private harvests: US Forest Service estimates, and State of Alaska DNR estimates. Rather than trying to reconcile the differences between the two harvest numbers, we present them separately and describe for each the methodology, possible biases, and our assessment of strengths and weaknesses.

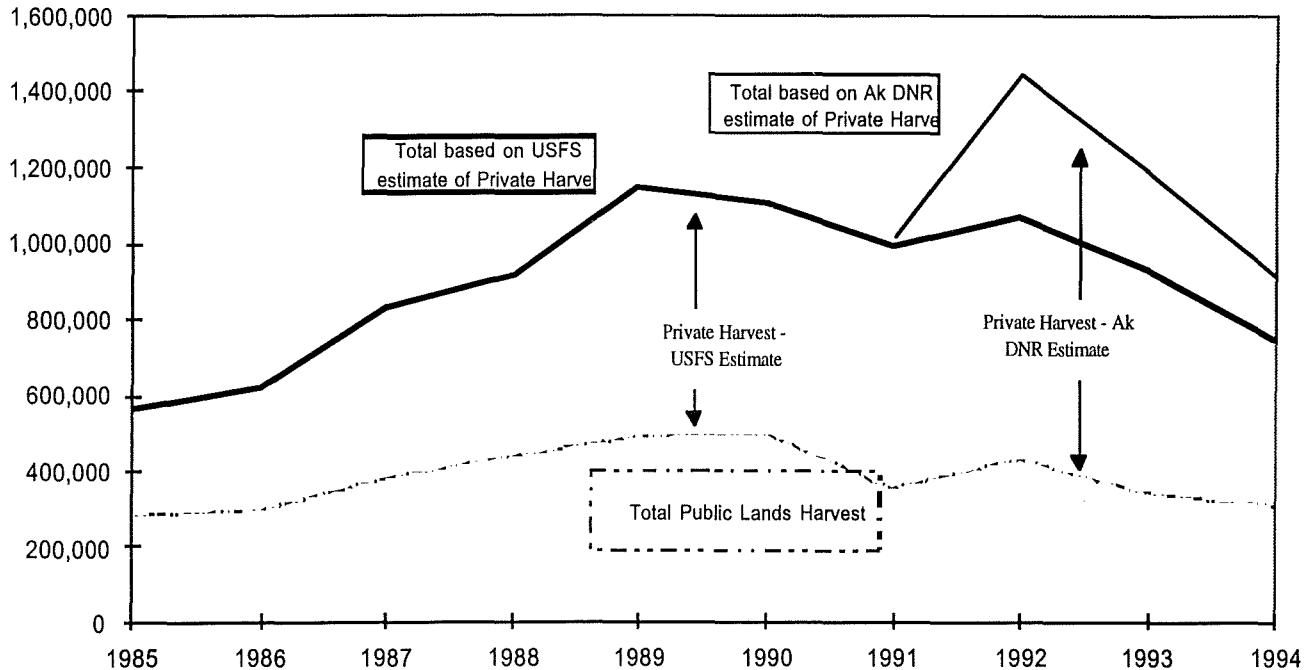
**USFS:** The USFS estimates private as well as public harvests for Southeast and Southcentral Alaska as part of their estimates of supply and demand for timber from the Tongass National Forest. These are published annually in "Timber Supply and Demand (year), ANILCA section 706(a) report to Congress". The private harvest is estimated from data about exports, imports and sawmill operations, combined with estimates of the percent of production which is not exported. The forest service conducts a survey of wood processors, concentrating on larger processors and those in southeast to develop estimates of the percent of production which is exported. This data may underestimate production from small producers, especially specialty producers who don't export their products. Historically, this has been only a very small fraction of total production, but it is also a growing part of the market. USFS data also doesn't estimate harvests in interior Alaska; in reporting total Alaska harvest as estimated by the Forest Service, we include state (Alaska DNR) estimates of interior harvests.

**Alaska DNR:** The Alaska Department of Natural Resources, Division of Forestry, has provided estimates of private harvest based on what private operators say they are doing. This provides a check of the Forest Service figures. Alaska's Forest Practices Act requires most timber harvesters to file Notifications of Operation with the Alaska Department of Natural Resources for harvest operations they are conducting. These notifications contain the location and acreage to be harvested, type of operation, starting date and estimated completion date. Foresters with the DNR have taken this information, and, based on their knowledge of the area and the operations, estimated annual board-feet of harvest. There reasons these numbers may not be perfectly accurate:

- harvest operations which impact less than 20 acres are exempt, and DNR estimates will not include them
- The notifications may cover operations planned for several years, and do not specify how many or which acres are harvested in any given year.
- Although foresters can estimate MBF per acre on average for an area, actual yields per acre will vary.

Thus, these estimates are more accurate over the long term, when variations around the averages will even out, than for any given year.

**Figure 2. Estimates of Total Alaska Timber Harvest**  
(Thousands of Board Feet)



## Wood Products

**Exports:** The majority of Alaska's timber harvest is destined for export; exported round logs alone accounted for 525 Million board feet, or roughly 60 to 70 percent (depending on private harvest numbers) of the state's total harvest in 1994. About 110 MMBF of lumber (including cants) was exported, and about 130 MMBF of logs were processed into pulp for export. Altogether, about 90 percent of Alaska's estimated total timber harvest (Alaska DNR-based estimate) can be accounted for in export statistics. There are indications that the domestic (both Alaska and the lower 48) use of Alaskan wood products is growing. USFS estimates (based on surveys of the largest producers) of the share of lumber sold within the US has grown from 5 percent in the '80s, to over 20 percent in 1993.

**Pulp:** Alaska now has only one operating large scale pulp mill, the Ketchikan Pulp Mill, with the capacity to process 174 MMBF per year<sup>1</sup>. KPC operated at 74 percent capacity in 1994<sup>2</sup>.

**Chips:** Chips are produced as by-products of sawmilling, and also in chipmills from utility grade logs. Chips are a close substitute for pulp logs, and therefore may be used in the Ketchikan pulp mill or exported instead of pulp logs, depending on prices, transportation costs, and other factors<sup>3</sup>. Chip exports have varied widely in the last decade, from none to over 100,000 short tons (st). In 1994, Alaska exported 73,503 st.

<sup>1</sup> Alaska's Forest Resources, Alaska Geographic Vol. 12 No. 2, p 132

<sup>2</sup> Timber Supply and Demand, 1994

<sup>3</sup> *idem*

**Table 1. Timber Harvest on Public Lands, 1985 - 1994**

Thousands of Board Feet

<b>Alaska Total</b>		Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Federal	Forest Svc		265,654	272,142	352,231	408,947	461,860	474,000	326,499	395,321	327,050	282,300
	BLM		271	252	185	112	295	407	675	850	1,061	
	BIA		871	0	0	0	3,600	300	7,253	6,163	1,180	
Total Federal			266,796	272,394	352,416	409,059	465,755	474,707	334,427	402,334	329,291	282,300
State			12,864	18,995	25,884	25,177	22,711	18,603	16,241	26,802	9,383	23,225
Total Public			279,660	291,389	378,300	434,236	488,466	493,310	350,668	429,136	338,674	305,525
<b>Southeast</b>		Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Federal	Forest Svc		265,300	271,579	339,200	407,062	392,344	473,000	325,464	392,348	317,452	275,800
	BLM											
	BIA		0.1	0	0	0	4	0	8	5	0	0
Total Federal			265,300	271,579	339,200	407,062	392,348	473,000	325,472	392,353	317,452	275,800
State			4,700	12,400	19,800	16,900	8,311	7,558	2,728	14,247	3,450	6,572
Total Public			270,000	283,979	359,000	423,962	400,658	480,558	328,200	406,600	320,902	282,372
<b>Southcentral</b>		Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Federal	Forest Svc		354	563	13,031	1,185	69,516	1,000	1,035	2,973	9,598	6,500
	BLM											
	BIA											
Total Federal			354	563	13,031	1,185	69,516	1,000	1,035	2,973	9,598	6,500
State			1,300	1,800	1,900	2,100	1,859	507	2,513	1,420	970	309
Total Public			1,654	2,363	14,931	3,285	71,375	1,507	3,548	4,393	10,568	6,809
<b>Interior</b>		Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Federal	Forest Svc		0	0	0	0	0	0	0	0	0	0
	BLM											
	BIA											
Total Federal												
State			6,864	4,795	4,184	6,177	12,541	10,565	11,000	11,135	4,963	16,359
Total Public			6,864	4,795	4,184	6,177	12,541	10,565	11,000	11,135	4,963	16,359

Sources: Federal Lands: Warren, "Production, Prices, Employment and Trade in Northwest Forest Industries, Fourth Quarter 1994". State Lands: Alaska Department of Natural Resources, Division of Forestry.

**Table 2. Timber Harvest on Private Lands, 1985 - 1994**

Thousands of Board Feet

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>Alaska Total</b>										
Alaska DNR							666,000	1,014,900	847,700	602,900
USFS	285,400	327,000	448,200	480,700	651,900	611,200	613,000	603,200	563,200	383,200
<b>Southeast</b>										
Alaska DNR							440,300	545,600	318,700	336,700
USFS	285,400	327,000	404,000	395,100	531,900	506,100	454,600	445,700	410,400	214,800
<b>Southcentral</b>										
Alaska DNR							201,800	435,300	503,400	207,800
USFS			44,200	85,600	120,000	105,100	134,500	123,500	127,200	110,000
<b>Interior</b>										
Alaska DNR							23,900	34,000	25,600	58,400
USFS										

Sources: "Alaska DNR" estimates from Alaska Department of Natural Resources, Division of Forestry. See text, p 3. "USFS" estimates from Timber Supply and Demand 1994, ANILCA section 706(a) report to Congress, USDA Forest Service, Alaska Region. Report No. 14, March 1995

**Table 3. Estimates of Total Alaska Timber Harvest, 1983 - 1994**

Thousands of Board Feet

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>Total Alaska</b>										
Public	279,660	291,389	378,300	434,236	488,466	493,310	350,668	429,136	338,674	305,525
Private (Ak DNR)							666,000	1,014,900	847,700	602,900
Private (USFS)	285,400	327,000	448,200	480,700	651,900	611,200	613,000	603,200	563,200	383,200
Total (Ak DNR)							1,016,668	1,444,036	1,186,374	908,425
Total (USFS)	565,060	618,389	826,500	914,936	1,140,366	1,104,510	987,568	1,066,336	927,474	747,125
<b>Southeast</b>										
Public			359,000	423,962	400,658	480,558	328,200	406,600	320,902	282,372
Private (Ak DNR)							440,300	545,600	318,700	336,700
Private (USFS)			404,000	395,100	531,900	506,100	454,600	445,700	410,400	214,800
Total (Ak DNR)							768,500	952,200	639,602	619,072
Total (USFS)			763,000	819,062	932,558	986,658	782,800	852,300	731,302	497,172
<b>Southcentral</b>										
Public			14,931	3,285	71,375	1,507	3,548	4,393	10,568	6,809
Private (Ak DNR)							201,800	435,300	503,400	207,800
Private (USFS)			44,200	85,600	120,000	105,100	134,500	123,500	127,200	110,000
Total (Ak DNR)							205,348	439,693	513,968	214,609
Total (USFS)			59,131	88,885	191,375	106,607	138,048	127,893	137,768	116,809
<b>Interior</b>										
Public							11,000	11,135	4,963	16,359
Private (Ak DNR)							23,900	34,000	25,600	58,400
Total (Ak DNR)							34,900	45,135	30,563	74,759

Source: Tables 1 and 2 above.



**Table 4. Volume of Wood Exports by Destination, 1985 -1994**

Thousand Board Feet of logs and lumber; Short Tons of pulp and chips

<b>Total Exports from Alaska</b>		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
logs (MBF)	Hemlock	177,301	196,653	234,230	260,031	278,963	251,500	226,013	212,684	217,853	200,129
	Redcedar	17,708	18,466	36,027	58,312	74,065	62,609	55,312	47,444	60,542	39,563
	Spruce	96,689	118,355	164,387	175,901	251,118	213,334	218,580	225,266	228,789	240,323
		7,492	12,309	18,483	25,294	38,915	41,154	28,972	46,599	55,859	45,124
	Hardwoods	0	31	82	469	65	7	0	77	31	0
	<b>Total Logs</b>	<b>299,190</b>	<b>345,814</b>	<b>453,209</b>	<b>520,007</b>	<b>643,126</b>	<b>568,604</b>	<b>528,877</b>	<b>532,077</b>	<b>563,074</b>	<b>525,139</b>
(MBF)	Hemlock	59,426	72,894	80,253	98,781	106,055	119,231	95,478	81,363	95,005	68,839
	Redcedar	0	918	10	113	2,532	5,002	3,069	575	59	0
	Spruce	27,701	43,162	49,085	64,845	72,870	87,776	69,782	52,036	55,856	42,679
		0	3,007	3,796	3,714	2,303	1	1,979	2,582	94	318
	<b>Total Lumber</b>	<b>87,127</b>	<b>119,981</b>	<b>133,144</b>	<b>167,453</b>	<b>183,760</b>	<b>212,010</b>	<b>170,308</b>	<b>136,556</b>	<b>151,894</b>	<b>111,836</b>
Dissolving Pulp (st)	199,600	228,200	279,800	306,000	302,700	318,500	293,400	307,200	214,500	178,100	
Paper Pulp (st)	7	8	27	31	22	44	17	21	5.2	0	
Chips (short tons)	0	0	252	11,505	85,866	28,283	101,397	15,509	56,289	73,503	

<b>To Japan</b>		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
logs (MBF)	Hemlock	148,414	153,998	142,786	137,983	201,145	171,198	137,515	116,016	119,343	116,970
	Redcedar	6,155	8,726	11,677	18,871	21,396	28,479	19,836	21,936	25,690	23,994
	Spruce	88,261	103,828	130,116	142,422	228,074	199,692	182,066	174,459	189,109	213,207
		7,390	12,289	16,621	22,379	38,573	39,922	25,570	41,987		41,652
	Hardwoods	0	0	29	31	65	7	0	0	31	0
	<b>Total Logs</b>	<b>250,220</b>	<b>278,841</b>	<b>301,229</b>	<b>321,686</b>	<b>489,253</b>	<b>439,298</b>	<b>364,987</b>	<b>354,398</b>		<b>395,823</b>
lumber /cants (MBF)	Hemlock	58,280	72,894	79,318	96,686	106,055	114,227	90,749	78,222	92,075	66,958
	Redcedar	0	0	0	113	2,532	1,140	2,863	575	0	0
	Spruce	27,701	43,141	47,919	61,404	71,854	85,322	66,072	46,372	50,915	39,952
		0	2,907	3,441	1,601	2,215	0	1,965	2,373	567	257
	<b>Total Lumber</b>	<b>85,981</b>	<b>118,942</b>	<b>130,678</b>	<b>159,804</b>	<b>182,656</b>	<b>200,689</b>	<b>161,649</b>	<b>127,540</b>	<b>143,557</b>	<b>107,166</b>
Dissolving Pulp (st)	87	99	105	120	111	93	100	91	96	25	
Paper Pulp (st)	5	8	9	16	10	19	8	11	5	0	

<b>To Other Countries</b>		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
logs (MBF)	Hemlock	28,887	42,655	91,444	122,048	77,818	80,302	88,498	96,668	98,510	83,159
	Redcedar	11,553	9,740	24,350	39,441	52,669	34,130	35,476	25,508	34,852	15,569
	Spruce	8,428	14,527	34,271	33,479	23,044	13,642	36,514	50,807	39,680	27,116
		102	20	1,862	2,915	342	1,232	3,402	4,612	55,859	3,472
	Hardwoods	0	31	53	438	0	0	0	77	0	0
	<b>Total Logs</b>	<b>48,970</b>	<b>66,973</b>	<b>151,980</b>	<b>198,321</b>	<b>153,873</b>	<b>129,306</b>	<b>163,890</b>	<b>177,679</b>	<b>563,074</b>	<b>129,316</b>
(MBF)	Hemlock	1,146	0	935	2,095	0	5,004	4,729	3,141	2,930	1,881
	Redcedar	0	918	10	0	0	3,862	206	0	59	0
	Spruce	0	21	1,166	3,441	1,016	2,454	3,710	5,664	4,941	2,727
		0	100	355	2,113	88	1	14	209	-473	61
	<b>Total Lumber</b>	<b>1,146</b>	<b>1,039</b>	<b>2,466</b>	<b>7,649</b>	<b>1,104</b>	<b>11,321</b>	<b>8,659</b>	<b>9,016</b>	<b>8,337</b>	<b>4,670</b>
Dissolving Pulp (st)	199,513	228,101	279,695	305,880	302,589	318,408	293,300	307,109	214,404	178,075	
Paper Pulp (st)	2	1	18	15	12	25	9	11	0	0	

Source: Warren, Debra D. Production, Prices, Employment and Trade in Northwest Forest Industries. First Quarter 1991 through Fourth Quarter 1993. Portland, Ore: US Department of Agriculture, Forest Service, Pacific Northwest Research Station.

**Table 5. Average Value of Wood Exports by Destination, 1985 - 1994**

Dollars per MBF for logs and lumber; Dollars per short ton for pulp and chips

Average Value, All Alaska Exports		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
logs	Hemlock	\$310.28	\$302.54	\$371.37	\$411.46	\$431.46	\$457.05	\$421.14	\$464.73	\$643.41	\$579.34
	Redcedar	\$354.70	\$356.44	\$375.44	\$443.01	\$404.27	\$439.35	\$397.51	\$517.51	\$687.89	\$647.25
	Spruce	\$527.64	\$541.12	\$587.59	\$641.21	\$620.86	\$781.02	\$717.43	\$726.64	\$937.01	\$811.57
		\$468.30	\$605.94	\$905.95	\$784.10	\$590.76	\$673.66	\$708.38	\$924.12	\$1,036.40	\$1,131.32
	Hardwoods		\$419.35	\$552.67	\$543.71	\$261.54	\$1,285.71	\$0.00	\$2,662.34	\$485.36	
		\$387.11	\$397.88	\$471.95	\$510.96	\$511.90	\$592.32	\$555.08	\$617.60	\$806.47	\$739.01
lumber /cants	Hemlock	\$219.80	\$233.89	\$241.19	\$296.81	\$333.46	\$364.44	\$364.64	\$393.55	\$454.08	\$468.11
	Redcedar	\$0.00	\$343.14	\$300.00	\$300.89	\$209.72	\$211.72	\$369.83	\$396.52	\$355.93	
	Spruce	\$361.76	\$338.75	\$374.07	\$456.24	\$456.91	\$453.14	\$480.80	\$629.62	\$589.18	\$713.84
		\$0.00	\$306.62	\$309.01	\$329.29	\$280.63	\$0.00	\$363.32	\$280.40	\$505.13	\$254.72
		\$264.94	\$274.28	\$292.11	\$359.27	\$380.04	\$397.56	\$412.31	\$481.40	\$507.35	\$561.28
Dissolving Pulp		\$377.76	\$392.53	\$469.22	\$605.36	\$732.16	\$624.88	\$557.12	\$539.74	\$528.08	\$560.60
Paper Pulp		\$344.96	\$359.42	\$461.69	\$516.46	\$631.30	\$458.11	\$410.41	\$422.99	\$390.08	
Chips				\$45.52	\$48.67	\$42.16	\$75.38	\$78.01	\$21.73	\$110.13	\$108.43

Average Value, Exports to Japan		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
logs	Hemlock	\$328.30	\$334.42	\$491.34	\$563.71	\$478.00	\$481.74	\$489.62	\$559.74	\$735.02	\$641.77
	Redcedar	\$354.02	\$379.90	\$390.68	\$435.59	\$465.88	\$440.68	\$447.87	\$537.52	\$664.34	\$658.75
	Spruce	\$565.19	\$596.55	\$678.69	\$718.39	\$637.74	\$782.91	\$750.06	\$750.71	\$980.78	\$826.66
		\$467.06	\$605.60	\$974.44	\$846.25	\$586.11	\$668.33	\$702.06	\$942.41	\$1,136.89	\$1,155.88
	Hardwoods			\$716.69	\$903.23	\$261.54	\$1,265.71			\$485.36	
		\$416.59	\$445.40	\$595.04	\$644.36	\$560.43	\$632.95	\$632.15	\$697.71	\$868.64	\$797.86
lumber /cants	Hemlock	\$220.14	\$233.89	\$240.94	\$296.44	\$333.46	\$369.54	\$370.90	\$397.54	\$458.94	\$473.34
	Redcedar				\$300.89	\$209.72	\$384.21	\$384.91	\$396.52		
	Spruce	\$361.76	\$338.31	\$369.14	\$443.62	\$453.20	\$442.51	\$480.02	\$564.05	\$558.36	\$669.60
		\$0.00	\$306.16	\$302.24	\$313.55	\$279.91	\$0.00	\$362.34	\$287.22	\$587.30	\$190.66
		\$265.77	\$273.53	\$289.57	\$353.17	\$378.20	\$400.65	\$415.65	\$456.05	\$494.00	\$545.84
Dissolving Pulp		\$413.59	\$416.24	\$480.87	\$590.48	\$741.49	\$671.57	\$614.33	\$589.78	\$578.17	\$557.17
Paper Pulp		313	359	468	462	666	491	460	445	390	

Average Value, Exports to Other Countries		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
logs (MBF)	Hemlock	\$217.70	\$187.44	\$184.04	\$239.33	\$311.16	\$404.41	\$314.73	\$350.70	\$532.43	\$491.53
	Redcedar	\$355.06	\$335.42	\$368.13	\$446.56	\$379.24	\$438.24	\$369.35	\$500.30	\$705.25	\$629.53
	Spruce	\$134.40	\$144.95	\$241.71	\$312.88	\$453.79	\$753.35	\$554.73	\$643.99	\$728.41	\$692.92
		\$558.14	\$814.85	\$294.58	\$306.96	\$1,115.22	\$846.37	\$755.88	\$757.61	\$1,036.40	\$836.68
	Hardwoods		\$419.35	\$462.92	\$518.26				\$2,662.34		
	<b>Total Logs</b>	<b>\$236.48</b>	<b>\$200.03</b>	<b>\$227.98</b>	<b>\$294.57</b>	<b>\$357.59</b>	<b>\$454.28</b>	<b>\$383.44</b>	<b>\$457.81</b>	<b>\$806.47</b>	<b>\$558.88</b>
(MBF)	Hemlock	\$202.51		\$262.40	\$313.89		\$248.02	\$244.51	\$294.18	\$301.35	\$281.94
	Redcedar		\$343.14	\$300.00			\$160.80	\$160.25		\$355.93	#DIV/0!
	Spruce		\$1,242.66	\$576.68	\$681.44	\$719.29	\$822.73	\$494.69	\$1,166.45	\$906.77	\$1,361.98
	Other Softwoods		\$319.99	\$374.63	\$341.22	\$298.75	\$0.00	\$500.87	\$202.97	\$603.63	\$524.61
		<b>Total Lumber</b>	<b>\$202.67</b>	<b>\$360.14</b>	<b>\$426.71</b>	<b>\$486.71</b>	<b>\$684.47</b>	<b>\$342.78</b>	<b>\$349.96</b>	<b>\$840.00</b>	<b>\$737.23</b>
Dissolving Pulp (st)		\$377.74	\$392.52	\$469.22	\$605.37	\$732.16	\$624.87	\$557.10	\$539.73	\$528.06	\$560.60
Paper Pulp (st)		\$423.71	\$359.42	\$458.82	\$571.22	\$604.65	\$434.16	\$363.33	\$401.38		

Source: Warren, Debra D. Production, Prices, Employment and Trade in Northwest Forest Industries. First Quarter 1991 through Fourth Quarter 1993. Portland, Ore: US Department of Agriculture, Forest Service, Pacific Northwest Research Station.

**Table 6. Employment in Timber Harvesting and Wood Products Industries**

(Average Annual Employment)

Year	Logging	Lumber	Pulp & Paper	Total
1959	427	364		791
1960	619	386		1,005
1961	379	283		662
1962	448	288		736
1963	580	277		857
1964	646	300	1,179	2,125
1965	762	318	1,230	2,310
1966	900	365	1,060	2,325
1967	1,229	387	958	2,573
1968	1,117	454	965	2,536
1969	990	593	965	2,548
1970	1,055	688	1,015	2,757
1971	1,095	659	1,010	2,764
1972	1,175	625	1,015	2,814
1973	1,444	733	1,072	3,249
1974	1,555	840	1,243	3,638
1975	1,397	779	1,203	3,378
1976	1,246	804	1,200	3,250
1977	1,382	845	1,250	3,477
1978	1,053	789	1,156	2,998
1979	1,221	917	1,096	3,234
1980	1,354	1,116	1,043	3,512
1981	1,129	1,051	985	3,164
1982	1,176	886	818	2,880
1983	1,099	743	755	2,597
1984	983	718	600	2,301
1985	1,186	506	628	2,319
1986	1,528	306	828	2,662
1987	1,571	599	885	3,055
1988	1,975	695	947	3,617
1989	2,301	593	978	3,872
1990	2,345	715	907	3,966
1991	1,789	817	910	3,515
1992	1,725	615	908	3,248
1993	1,702	645	859	3,206

Source: Alaska Department of Labor, Research and Analysis Division

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