UTILIZATION AND MARKET POTENTIAL OF POPLAR IN ALBERTA

W.J. Ondro

INFORMATION REPORT NOR-X-305

NORTHERN FORESTRY CENTRE
FORESTRY CANADA
1989

Catalogue No. Fo46-12/305E
ISBN 0-662-16777-5
ISSN 0704-7673

This publication is available at no charge from:
Northern Forestry Centre
Forestry Canada
5320 - 122 Street
Edmonton, Alberta
T6H 3S5

A microfiche edition of this publication may be purchased from:
Micromedia Ltd.
Place du Portage
165, Hôtel-de-Ville
Hull, Quebec
J8X 3X2

Printed in Canada

Ondro, W.J. 1989. *Utilization and market potential of poplar in Alberta.* For. Can., North. For. Cent., Edmonton, Alberta. Inf. Rep. NOR-X-305.

ABSTRACT

The utilization and market potential of poplar in Alberta was assessed for 1987–88. The results are discussed in terms of poplar inventory, present and potential utilization of poplar, and markets for various poplar wood products. Information on commercial forest industry producers is provided in directories. Numerous tables provide detailed information.

RESUME

L'utilisation et le potentiel commercial du peuplier en Alberta ont fait l'objet d'une évaluation pour 1987–1988. Les résultats de cette évaluation sont examinés en fonction de l'inventaire de peupliers, de l'utilisation actuelle et potentielle des peupliers, et des marchés pour les divers produits du peuplier. Les renseignements sur les producteurs de l'industrie forestière commerciale sont donnés dans des annuaires. De nombreux tableaux présentent des informations détaillées.

FOREWORD

ENFOR (ENergy from the FORest) is a contract research and development (R&D) program managed by Forestry Canada. It is aimed at generating sufficient knowledge and technology to realize a marked increase in the contribution of forest biomass to Canada's energy supply. The program was initiated in 1978 as part of a federal interdepartmental initiative to develop renewable energy sources.

The ENFOR program deals with biomass supply matters such as inventory, growth, harvesting, processing, transportation, environmental impacts, and socio-economic impacts and constraints. A technical committee oversees the program, developing priorities, assessing proposals, and making recommendations. Approved projects are generally carried out under contract.

General information on the operation of the ENFOR program, including the preparation and submission of R&D proposals, is available upon request from:

The ENFOR Secretariat
Forestry Canada
Place Vincent Massey
351 St. Joseph Blvd.
Hull, Quebec
K1A 1G5

This report is based in part on ENFOR Project P-207, which was carried out under contract by Woodland Resource Services Ltd., Edmonton, Alberta (DSS File No. OSG 81-00012-01SG-KH 505-1-0136).

This work was supported in part by the
Federal Panel on Energy Research and Development (PERD).

CONTENTS

APPENDIXES

FIGURES

TABLES

NOTE

The exclusion of certain manufactured products does not necessarily imply disapproval nor does the mention of other products necessarily imply endorsement by Forestry Canada.

INTRODUCTION

The increasing scarcity of economically accessible softwood timber in Canada has prompted an interest in the abundant and underutilized hardwoods. The poplars—trembling aspen (*Populus tremuloides* Michx.), balsam poplar (*Populus balsamifera* L.), and black cottonwood (*Populus trichocarpa* Torr. & Gray)—make up about 11% of Canada's total growing stock and over one-half of all hardwoods (Zsuffa et al. 1979). In Alberta, one-third of the growing stock is poplar[1]; this is nearly one-quarter of the Canadian poplar inventory. The use of poplar is gradually increasing; in Alberta it accounted for only 2.4% of the total timber harvest in 1980 but had increased to 17.2% by 1988[2] (Alberta Energy and Natural Resources 1982–86; Alberta Forestry, Lands and Wildlife 1988).

Attempts to increase the utilization of poplar in Alberta for structural solid wood (lumber) products have faced technical problems and stiff competition from higher value spruce, pine, and fir (SPF) products. Poplar studs have received only limited acceptance by the construction industry. This has been due primarily to inadequate supplies at competitive prices rather than user resistance (Carrol-Hatch (International) Ltd. 1983). A breakthrough in poplar utilization occurred in the mid-1950s with the advent of aspen waferboard. A major Alberta success in aspen structural panelboards came in the early 1980s with the manufacturing of waferboard and the development of oriented strand board (OSB). Preliminary tests to utilize poplar for pulp and paper products in Alberta have shown encouraging results.

To compete with the SPF lumber industry, poplar product manufacturers should increase the output of lumber for secondary products such as pallets, crates, cabinets, furniture, and fuels, and they must find profitable ways of utilizing the abundant mill residues.

This study summarizes the utilization of poplar in Alberta and has four main objectives:

1. to provide a market overview of poplar wood products;
2. to evaluate the present utilization of poplar in Alberta;
3. to describe the size and structure of poplar-using industries; and
4. to provide directories of the 1987–88 poplar-using industries in Alberta.

MARKET OVERVIEW FOR ALBERTA'S POPLAR WOOD PRODUCTS

Waferboard

Waferboard and OSB are similar products in both their manufacturing process and application; in fact, some waferboard mills can also produce OSB products (Appendix 1). These products are substitutes for softwood plywood in roof, wall, and floor sheathing and for sanded plywood and particle board in underlayment.

In the early 1970s all Canadian waferboard was used domestically; however, due to lower cost and product improvement, aspen waferboard producers were able to increase both their production and number of markets. By 1979, Canadian waferboard production had more than doubled, and about 75% of it was exported to the United States. In 1981, Canadian waferboard accounted for 53.1% of the United States market. By 1986, however, the introduction of new waferboard plants in the United States increased their supply of this product to 3.5 billion sq. ft., intensifying competition for Canadian waferboard (Widman Management Ltd. 1987, 1988). Despite the increased supply and demand for waferboard and OSB in North American markets, there will likely be a substantial over-supply of this product by 1990 (Table 1).

In Alberta, aspen waferboard was first produced in 1975 at Slave Lake by Alberta Aspenboard Ltd. The mill was purchased by Weldwood of Canada Ltd. in 1979 and renovated. This mill produced up to 98 million sq. ft. of waferboard (3/8-in. basis) annually from 1981 to September 1986, when it was converted to an OSB mill.

The relationship between waferboard and Canadian softwood plywood (CSP) prices has varied over the last 10 years. Waferboard prices were 10–15% lower than plywood prices in the late 1970s. In 1980 and 1981,

---

[1] Personal communication from D. Morgan, Alberta Forestry, Lands and Wildlife, Edmonton, Alberta, November 1988.

[2] Personal communication from R. Dunnigan, Alberta Forestry, Lands and Wildlife, Edmonton, Alberta, November 1988. Telephone survey of poplar-using industries, June to December 1988.

Table 1. Actual and estimated production and consumption of waferboard and oriented strand board (3/8-in. basis) in Canada and the United States, 1980–90 (Widman Management Ltd. 1987, 1988, 1989)

	Actual production (MM sq. ft.)						Estimated production (MM sq. ft.)	
	1980	1983	1984	1985	1986	1987	1990	1993
Production (supply)								
Canada	651	976	1 345	1 510	1 522	1 796	1 650	4 750
United States	196	1 280	2 088	2 669	3 545	4 110	3 835	6 802
Total	847	2 256	3 433	4 179	5 067	5 906	5 485	11 552
Consumption (demand)								
Canada	311	536	631	668	788	996	863	1 250
United States	536	1 706	2 793	3 505	3 510	4 901	4 628	10 558
Total	847	2 242	3 424	4 173	4 298	5 897	5 491	11 808
Surplus (deficit)								
Canada	340	426	705	872	734	800	787	3 500
United States	(340)	(426)	(705)	(836)	35	(791)	(793)	(3 756)
Total	0	0	0	36	769	9	(6)	(256)

increased competition among waferboard producers and depressed prices for plywood pushed waferboard prices 20–30% lower than plywood prices (Table 2). By 1985, the lower prices of waferboard helped to increase its market share. The prices of waferboard and OSB increased in 1985, 1986, and 1987, bringing them closer to CSP prices; the price of Canadian softwood plywood was about 25% higher than waferboard and 8% higher than OSB. The production of waferboard was reaching a point of overcapacity in 1987 and 1988, and it is likely that consumption of this product will level off in the next few years (Table 3). Canadian waferboard and OSB producers, who pay a 4% tariff when exporting to the U.S., have a definite advantage over CSP producers, who pay a flat 20% tariff (Widman Management Ltd. 1987, 1988). Should there be an additional demand for panelboard, it will probably be filled by OSB instead of waferboard.

Oriented Strand Board

Oriented strand board is a reconstituted panel made of long, narrow, aligned wood strands that have a length-to-width ratio of 2 or more to improve the panel's strength properties. This superior product combines the economy of waferized panels with the technology of veneer plywood. The strength and stiffness of OSB panels are increased longitudinally and are approximately equal to that of coniferous plywood and are much superior to that of waferboard (Canada Mortgage and Housing Corporation 1986). Pressing and adhesive characteristics are similar to those of waferboard. Panels are solid throughout, which results in less deflection under load. Although the panels are edge sealed to provide improved moisture resistance, they can withstand short construction delays but are not intended for permanent exposure.

The superior strength and stiffness of OSB over waferboard led to its acceptance by the American Plywood Association (APA), Canadian Standards Association (CSA), and other building code associations and customers in Canada and the United States. This increased sales of OSB, improved its price, and led to a sizable displacement of plywood and waferboard in construction.

Oriented strand board is approved for sidewall sheathing, roofing, and flooring application. Sidewall panels may be attached either perpendicular or parallel to studs. The screen-textured back of OSB provides good traction to roof rafters and a safer walking surface. Oriented strand board with a thickness of 7/16 in. is approved for a 24-in. wall or roof span; 15/32-in. and 1/2-in. can be used for a 32-in. roof span (Appendix 2). Flooring panels with non-veneer surfaces must be covered

Table 2. Actual and estimated average annual fob mill prices of SPF and poplar wood products in Canadian dollars

Year	Canadian exchange value of U.S. $[a]	Standard 8-ft. 2 × 4 framing lumber		Stud lumber		Plywood 3/8-in.		Aspen waferboard, 3/8-in.[d]	Aspen OSB, 3/8-in.[d]
		Spruce, pine, fir ($/M fbm)	Poplar[b] ($/M fbm)	Spruce pine, fir ($/M fbm)	Poplar[b] ($/M fbm)	Spruce pine, fir[c] ($/M sq. ft.)	Poplar[b] ($/M sq. ft.)	($/M sq. ft.)	($/M sq. ft.)
1981[e]	1.1693	182	155	168	142	234	199	181	183[f]
1982[e]	1.2100	171	145	145	123	190	162	165	167[f]
1983[e]	1.2344	230	196	218	185	224	190	184	185[f]
1984[g]	1.2910	199	169	179	152	206	175	175	181
1985[g]	1.3620	208	177	189	161	230	196	197	211
1986[g]	1.4340	257[h]	218	210[h]	179	290	247	208	267
1987[g]	1.3888	278	236	224	190	268	228	143	203
Forecast									
1988[i]	1.1874	224[h]	190	202[h]	172	220	187	126	150
1989[i]	1.1970	213[h]	181	198[h]	168	187	159	117	140
1990[i]	1.2000	204[h]	173	192h	163	176	150	112	134
1993[i]	1.1950	287[h]	244	257[h]	218	251	213	175	209

[a] Canada yearly average.
[b] Poplar price estimated at 85% of SPF price.
[c] 20% flat tariff when exporting plywood to the U.S. not deducted.
[d] Net prices fob mill after deduction of export tax: 7.8% in 1986 and 4.0% in 1987 and later.
[e] Source: Widman Management Ltd. 1987, 1988, 1989.
[f] Source: Personal communication from J. Krantz, Minnesota Ministry of Natural Resources, June 1988.
[g] Source: Random Length Publications Inc. 1981–89. Random lengths. Weekly. Eugene, Oregon.
[h] Source: Net price fob mill after deduction of a 15% export tax.
[i] Source: Widman Management Ltd. 1989 and personal communication from R. Hammerstedt, Widman Management Ltd., Vancouver, British Columbia, February 1989.

Table 3. Production and consumption of wood products in Canada (Widman Management Ltd. 1985, 1987, 1988, 1989)

Year	Waferboard, 3/8-in. (MM sq. ft.)		OSB, 3/8-in. (MM sq. ft.)		Softwood dimension lumber (MM fbm)		CSP, 3/8-in. (MM sq. ft.)	
	Production	Consumption	Production	Consumption	Production	Consumption	Production	Consumption
1981	789	416	0	0	16 636	5 307	1 310	1 067
1982	556	333	0	0	15 832	4 471	1 054	771
1983	901	511	75	25	19 992	5 725	1 308	1 058
1984	1 095	546	250	85	20 340	4 992	1 215	920
1985	1 260	583	250	85	21 855	5 425	1 288	875
1986[a]	1 122	615	400	173	21 980	5 700	1 185	900
1987[a]	1 196	696	600	300	26 274	8 450	1 471	1 297
Forecast[b]								
1988	983	583	1 000	500	26 015	7 900	1 456	1 295
1989	589	415	1 150	500	23 865	7 100	1 225	1 096
1990	400	213	1 250	650	22 150	6 850	1 155	1 033
1993	1 100	310	3 650	940	26 000	7 800	1 330	1 180

[a] Source: Widman Management Ltd. 1987, 1988, 1989.
[b] Source: Estimates from Widman Management Ltd. 1989 and personal communication from R. Hammerstedt, Widman Management Ltd., Vancouver, British Columbia, February 1989.

with at least 1/4-in. of underlayment before flooring can be laid. Panel thicknesses of 5/8 in. and 3/4 in. are rated for floor spans of 20 and 24 in.

In December 1988 there were nine aspen-using OSB mills in North America: six in the U.S. (four in Minnesota, one in Michigan, and one in Wisconsin) and three in Alberta[3]. Pelican Mills Ltd. in Edson was the first Canadian OSB plant, opening in 1983 and having an annual capacity of 250 million sq. ft. (3/8-in. basis). Weldwood's waferboard plant at Slave Lake was converted in September 1986 to OSB production and has an annual capacity of 170 million sq. ft. Pelican's second OSB plant in Drayton Valley, Alberta, came on stream in January 1987 with an annual capacity of 250 million sq. ft.

Pulp and Paper Products

Poplar bleached sulfate market pulp, market mechanical pulp, newsprint, and printing and writing papers were identified for Alberta as economically viable and marketable (Ekono Consultants Ltd. 1986; Carroll-Hatch (International) Ltd. 1983). Bleached sulfate pulp from aspen, beech, birch, maple, and other short-fiber species is made in the northeastern United States for a variety of papers and paperboards, especially where high strength of product is not essential. This pulp is well suited for manufacturing certain fine papers, tissues, sanitary products, and business and specialty papers. The seven hardwood bleached kraft mills and one hardwood bisulfite pulp mill in operation in Ontario, Quebec, and New Brunswick produced 710 000 tonnes of hardwood pulp in 1986[4]. These mills utilize poplar (mostly aspen) as 85% of their hardwood supply for pulp, which can be used for writing and printing papers. These papers are readily marketed in eastern Canada and the United States. Potential poplar pulp and paper mills in Alberta would be in the position to share these markets to sell poplar bleached kraft pulp to Japan and South Korea, which import about 42% of their supply from Brazil (Carroll-Hatch (International) Ltd. 1983).

Extensive changes in the forest product industry in the last 3-4 years and high capital cost and thus relatively long payback time shifted interests away from high capital-intensive pulp and paper industries. Because of this, the chemithermomechanical (CTMP) and thermomechanical pulping (TMP) products have increased their market share of the pulp and paper industry at a previously unparalleled pace (Ekono Consultants Ltd. 1986).

The high yield of market mechanical pulp[5] (1 t of pulp[6] from 3.0 m^3 of aspen logs versus twice that volume required for 1 t of bleached market pulp) results in much lower unit logging and manufacturing costs for this product. The TMP process is also simpler and requires less chemicals. Thermomechanical pulp can displace some bleached hardwood chemical pulp in printing and writing papers but cannot be used for high quality bright papers. Market demand for TMP has increased by 3% annually since 1981. Japan, South Korea, Taiwan, and India could be the major markets for pulp and paper, while China, due to foreign exchange shortages, may be more interested in importing the cheaper chemical pulps (Widman Management Ltd. 1985).

Newsprint, which is normally made from softwoods, can be manufactured from a mixture of 40% aspen TMP, 50% softwood TMP, and 10% semibleached chemical kraft softwood pulp[7]; this gives the product the required strength for runnability on the paper-making machine and in the pressroom (Woodbridge, Reed and Associates Ltd. 1985). The newspaper printers in Sweden were unable to detect any noticeable differences in the printing properties of the trial aspen CTMP-based paper compared with standard softwood newsprint. Small-to-moderate amounts of aspen decay are not critical to newsprint opacity, but high levels of decay may substantially reduce its brightness. Brightness, however, can be improved by the addition of chemicals. Canada, the United States, and Scandinavian countries are the world leaders in the production of newsprint. Demand for this product was traditionally strong and steady in the United States, Europe, and Japan, but it declined slightly starting with the 1982-83 recession. The decline in demand for Canadian newsprint coincided with a substantial increase in newsprint mill capacity in Sweden in the late 1970s and sizable devaluation of all Scandinavian currencies in the early 1980s. In this competitive market, the short-term outlook for a potential Alberta newsprint mill is moderate (Woodbridge, Reed and Associates Ltd.

---

[3] Four Canadian waferboard mills in Quebec and Ontario and the majority of aspen-using waferboard mills in the U.S. have the capability to produce OSB (Appendix 1).

[4] Personal communication from M. MacEwan of Woodbridge, Reed and Associates Ltd., Toronto, Ontario, November 1988.

[5] Market mechanical pulp is pulp usually sold on the market in the flash-dried stage.

[6] Selected metric conversion values and timber product equivalents are provided in Appendix 3.

[7] Personal communiction from M. MacEwan of Woodbridge, Reed and Associates Ltd., Toronto, Ontario, November 1988.

1985) but appears to be good in the longer term (10–15 years). The demand for newsprint in 1987 and the market outlook for 1988 is good to excellent, and a moderate outlook is expected for this product in 1989 and 1990[8].

Pulp and paper mill complexes offer good potential for the profitable industrial use of poplar in Alberta (Jaakko Pöyry International Oy 1983). The same report concludes that Alberta pulp and paper mills, despite their higher capital costs (17%), would be very competitive with those in the southern United States because of lower stumpage rates and a 60% lower cost of energy. Alberta's production costs are competitive with those of British Columbia and the northwestern United States (Ekono Consultants Ltd. 1986). High wood costs will likely keep Scandinavian products from North American and Pacific Rim markets. In the Pacific Rim, Australia and New Zealand will have a clear cost advantage; however, both of them have limited wood resources. The South American mills will have lower production costs than Alberta mills, but the demand from that continent will likely absorb a major share of their production (Ekono Consultants Ltd. 1986).

Further information, especially on business and economic aspects of pulp and paper mills, can be found in the 1973 publication of the Food and Agriculture Organization of the United Nations (FAO), *Guide for planning pulp and paper enterprises*.

Lumber

From 1980 to 1986 there was a gradual increase in the production of softwood dimension lumber in Canada (Table 3), while national consumption increased only negligibly. The production of poplar lumber in Canada, which includes aspen, balsam poplar, and eastern cottonwood (*Populus deltoides* Bartr.), reached an early high of 52.5 million (MM) foot board measure (fbm) in 1960 with the opening of several poplar stud mills; however, the economic recession and a decline in demand for lumber in the U.S. in the 1970s resulted in the closure of many mills and a significant drop in poplar lumber production. From 1975 to 1985 the production of poplar lumber recovered gradually from 16.6 to 53 MM fbm. (Statistics Canada 1981–86). About three-quarters of Canadian production comes from Quebec and Ontario. Small quantities are produced in British Columbia, Alberta, and Manitoba. Most dimension lumber is used for high-quality furniture stock or low-quality pallets.

Poplar sawmills in eastern Canada have a competitive advantage over western sawmills because they are much closer to the large manufacturers of furniture, pallets, and crates in Canada and the United States. This is important for the marketing of low grade stock such as pallets, because freight cost precludes profitable sales at long distances from the producing region. In the United States, the bulk of poplar lumber is produced and used in the Lake States; therefore transportation costs are not as critical a factor as in British Columbia and Alberta (Carroll–Hatch (International) Ltd. 1983).

Although poplar lumber has gained a moderate acceptance in the construction market, it is the first casualty in a market downturn. In this market, the lack of a consistent supply, range of sizes, and grades, and the relatively high prices (Table 2) are the main reasons for its limited use. The bulk of poplar lumber is dimension lumber, but the preference of builders for softwoods limits poplar use in housing construction. Green poplar has a very high moisture content, especially when logged in winter, and it must be kiln dried to avoid warping and twisting. The necessity for kiln drying plus the high incidences of decay, sweep, and crook may make the cost of production of this product up to 30% higher than that of SPF (Carroll–Hatch (International) Ltd. 1983). Under these circumstances, only mill operators close to high-quality poplar stands that are relatively free of decay and crook can compete with SPF in a limited range of products; however, an adequate and continuous supply of poplar lumber at competitive prices affects the use of the product more than the market acceptance (Carroll–Hatch (International) Ltd. 1983).

In the industrial market, poplar has been extensively used as a suitable species for pallets (Fig. 1) and containers. In Alberta, Manitoba, Ontario, and Quebec the use of green poplar for pallets is well established despite Canada Pallet Council specifications, which do not endorse poplar pallets (Carroll–Hatch (International) Ltd. 1983).

Competition between SPF lumber and poplar lumber is high in Canada. In western Canada, SPF products dominate the construction and industrial markets, where special sizes (such as for floor and ceiling trusses) and high strength are required. In fact, pallets are made of SPF when market prices for SPF fall below the production cost of poplar lumber. In Alberta, select and mill run (cull-out) grades of rough and dressed poplar lumber are produced in limited volumes for construction lumber or for specialty products such as furniture.

---

[8] Personal communication from M. MacEwan of Woodbridge, Reed and Associates Ltd., Toronto, Ontario, November 1988.

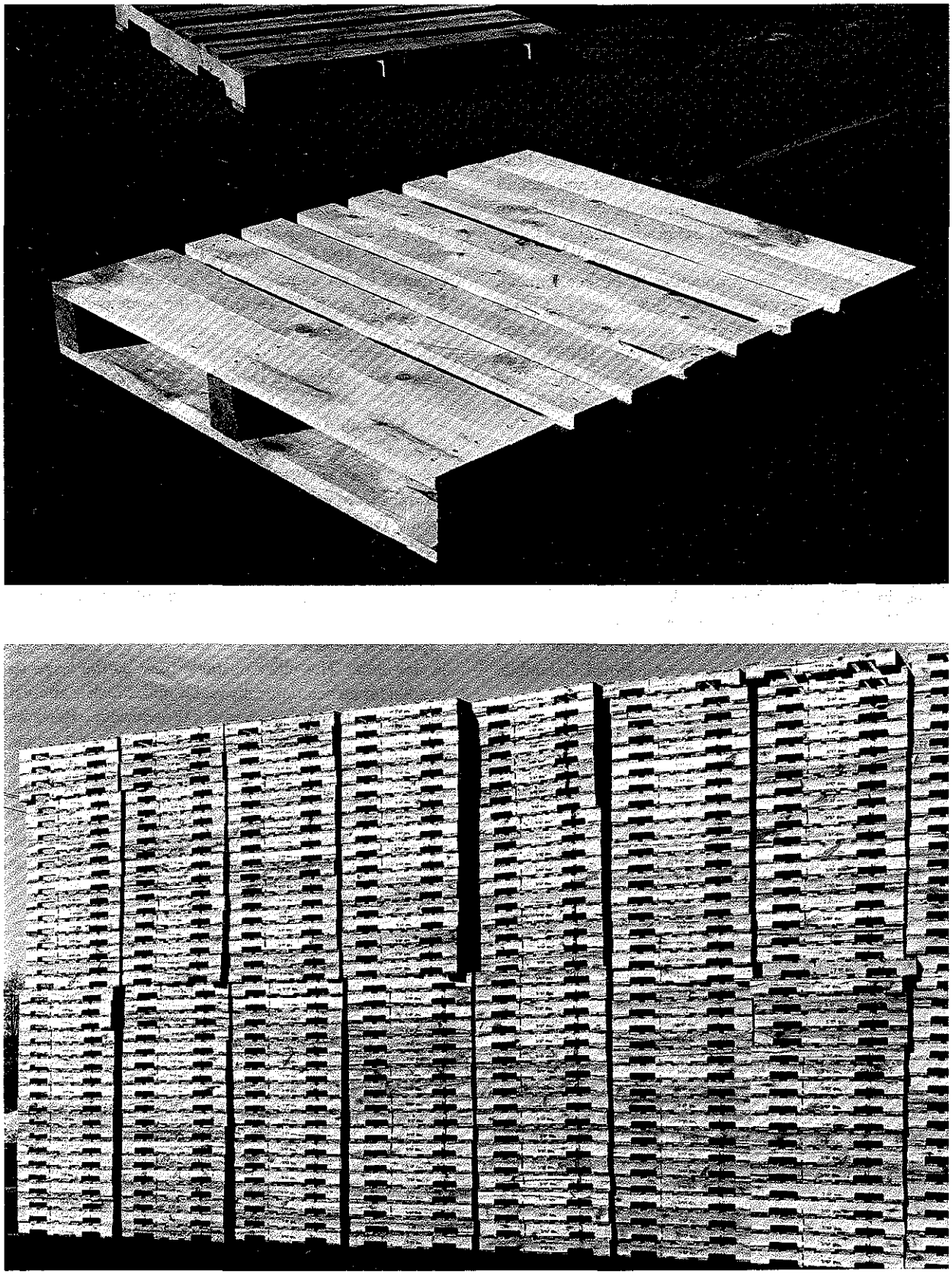

Figure 1. Poplar in Alberta is commonly used for pallets.

The lumber is normally air-dried and then used or remanufactured into secondary products. The free on board (fob) mill prices for poplar lumber vary according to dimensions and grade (Table 4), operator, geographic location of the sawmill, proximity of quality poplar stands, and other factors. Retail prices for select grades of rough poplar lumber are about 10–35% higher than those for cull-out grades. The prices for first and second (FAS) grades of green rough lumber in the U.S.[9] are about twice that of the lowest 3B grades (Table 5).

For poplar lumber production to be economical, high quality lumber, such as FAS, S & S, and IC (Table 5), must make up the bulk of the volume recovered and sold (Carroll–Hatch (International) Ltd. 1983). This situation is unlikely to occur, however, except where high quality poplar stands are found near the mills and close to lumber markets.

Veneer and Plywood

Canadian production of poplar (including aspen and cottonwood) plywood peaked at 230 MM sq. ft. (1/4-in. basis) in 1973. From 1982 to 1987 it averaged about 180 MM sq. ft. annually. Exterior sheathing poplar plywood is mainly produced in Ontario and Quebec, with small quantities produced on demand in British Columbia.

Two poplar veneer and plywood mills, one in Slave Lake, Alberta, and the other in British Columbia, were in operation in the 1960s and the early 1970s; however, due to low demand these mills were converted to manufacture other products.

Canadian standards for softwood plywood allow for the use of poplar veneer in the core layers, except in British Columbia, where the Council of Forest Industries (COFI) prohibits its use in CSP. It is therefore unlikely that there would be any sizable market for poplar veneer in western Canada.

Softwood plywood industry sources suggest that the price of poplar veneer is usually 10–20% lower than the price of SPF veneer. Retail prices for 1/16-in. green SPF veneer were about $17.00/M (thousand) sq. ft. from 1977 to 1981; they dropped to about $15.00/M sq. ft. during the 1982–85 period. Poplar veneer prices discounted by an average of 15% would be $14.45 and $12.75/M sq. ft. (1/16-in.) for the same periods.

Medium Density Fiberboard

In North America, the technology for manufacturing medium density fiberboard (MDF) is well established. In Alberta there is currently one MDF mill using softwood residues from several larger sawmills in the Whitecourt area. Trial production indicates that aspen sawmill residues can be utilized to produce good quality panels. The cost of transporting poplar residues to the mill may be one of the major obstacles to profitable operation of other MDF mills in Alberta because the few mills utilizing aspen and generating mill residues are not concentrated in one area. The other obstacle may be the large size needed for an economically viable mill, which is about 50 million sq. ft. (3/4-in. basis) (Woodbridge, Reed and Associates Ltd. 1985). At present, however, the demand and the market size for MDF in western Canada is not large enough to absorb even this small production (Woodbridge, Reed and Associates Ltd. 1985). The demand for this product will likely increase in the near future with the growth of secondary industries in Alberta and new uses of MDF.

POPLAR INVENTORY

The Growing Stock of Poplar in North America

Alberta has about 879 million m^3 or 22% of the Canadian poplar growing stock (Northern Alberta Development Council 1985). The growing stock of poplar in Alberta is slightly less than the combined volume for these species in British Columbia, Saskatchewan, and Manitoba (Fig. 2). The forest inventory in Ontario does not separate trembling aspen from other poplars, and the inventory of poplar is tabulated in gross total volume. Experience from volume measurements of poplar in Ontario shows that gross merchantable volume is about 15% lower than gross total volume[10].

British Columbia has about 281 million m^3 of net merchantable (decay-free) poplar in stands of trees >81 years of age with a diameter at breast height (dbh) of ≥17.5 cm. Saskatchewan and Manitoba have 278 and 243 million m^3, respectively. Quebec's gross total volume of poplar is about 262 million m^3.

---

[9] Definitions of U.S. grades of poplar lumber are given in Appendix 4.

[10] Personal communication from Dr. J.E. Osborn of Ontario Minist. Nat. Resour., Toronto, Ontario, June 1988.

Table 4. Average fob mill prices of poplar lumber in Alberta, July 1988[a]

Dimensions (in.)	Length (ft.)	Grade		
		Rough select ($/M fbm)	Rough mill run (cull-out) ($/M fbm)	Planed mill run (cull-out) ($/M fbm)
1 × 4, 1 × 6	8	185	150	200
2 × 4, 2 × 6, 2 × 8	8	185	150	200
3 × 3, 3 × 10	8	185	150	200
4 × 4	8–16	195	170	208
6 × 6	8–16	205	185	218
8 × 8	8–16	215	200	218
10 × 10	8–16	215	200	218

[a] Source: Sawmill-planing mill complexes with annual output of 100 to 1 MM fbm in Alberta, July 1988 (Appendixes 8 and 9).

Table 5. Retail prices for grades of aspen rough green lumber of random lengths in the U.S. Lake States, June 1987

Thickness (in.)	Ungraded mill run	Grade[a] ($/M fbm)[b]					
		FAS	S & S	#1C	#2A	#3A	#3B
1.0[c]	236	351	351	351	236	229	189
1.25[c]	236	329	329	329	203	203	162
1.5[d]	236	335	335	335	220	215	172
2.0[e]	243	350	345	345	240	230	185
2.5[d]	243	360	355	355	255	245	195
4.0 and 5.0[e]	250						

[a] Grades: FAS = first and second grade; S & S = select and better grade; #1C = No. 1C common grade; #2A = No. 2A common grade; #3A = No. 3A common grade; #3B = 3B common grade. For definitions of these grades see Appendix 4.

[b] Exchange value of the U.S. $ = 1.3888 Cdn. $ (Widman Management Ltd. 1989).

[c] Source: Wisconsin Forest Product Price Review, University of Wisconsin, Madison, Wisconsin, 1987.

[d] Estimates by the author.

[e] Source: Personal communication from T. Peterson, University of Wisconsin, Madison, Wisconsin, November 1987.

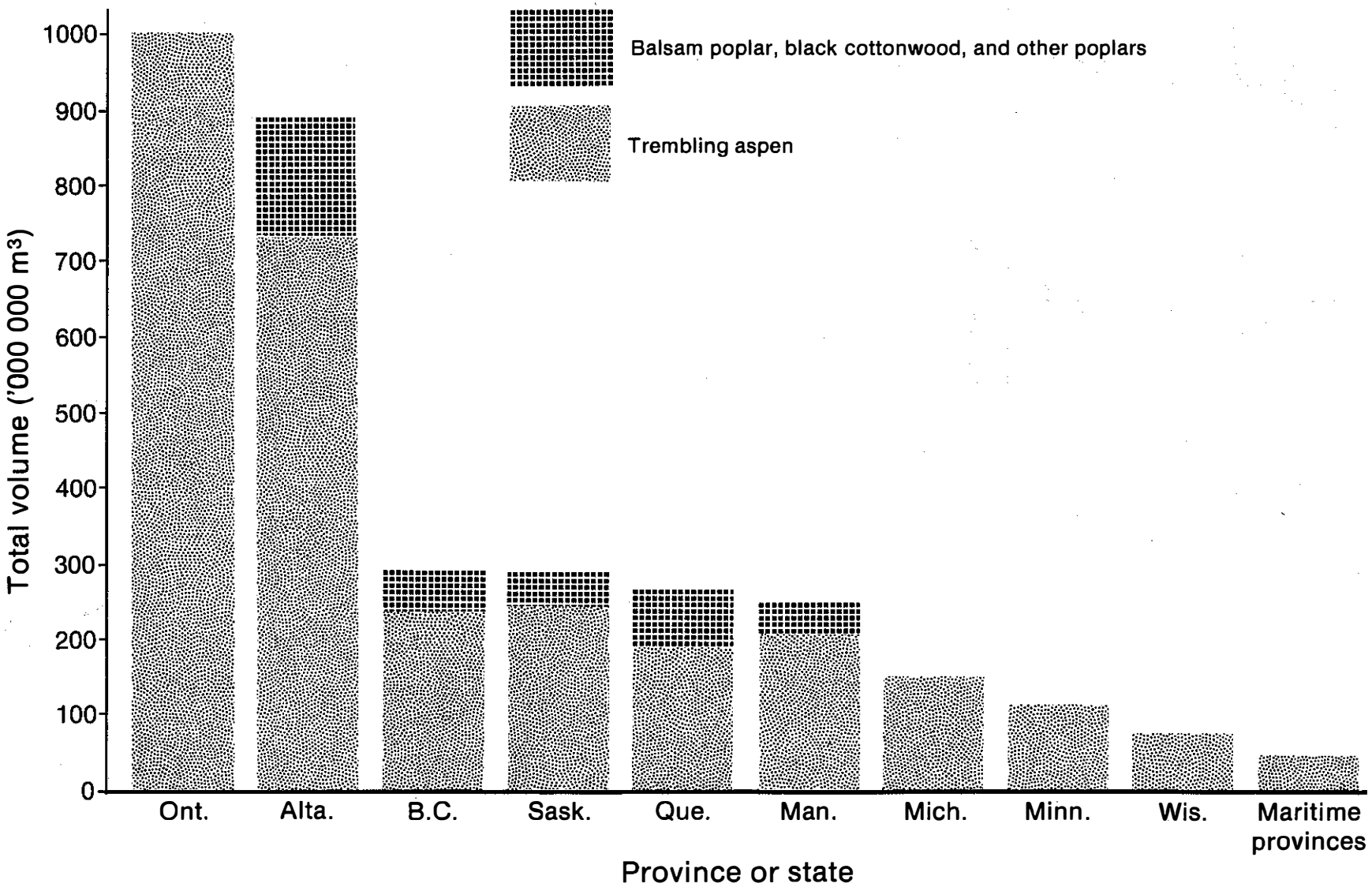

Figure 2. Poplar growing stock in major producing regions (on Crown patented, state, and private lands) in Canada and the United States. (Source: Personal communications, June 1987.)

Michigan, Minnesota, and Wisconsin have smaller total volumes of poplar growing stock on State lands than those on Crown lands in some Canadian provinces; however, a substantial proportion of lands supporting poplar stands in the U.S. are privately owned.

Smaller areas of poplar growing stock exist in the Maritime provinces and several states including New York, Maine, Colorado, Wyoming, South and North Dakota, and Montana.

The Growing Stock of Poplar in Alberta

Out of six native poplars in Canada, only trembling aspen (white poplar), balsam poplar (black poplar), and black cottonwood have commercial significance in Alberta. Eastern cottonwood, narrowleaf cottonwood (*Populus angustifolia* James), and largetooth aspen (*Populus grandidentata* Michx.), are the other poplars with minor occurrence in the province (Hosie 1969).

Aspen in Alberta represents 81% of the hardwood growing stock; other poplars and white birch account for about 15 and 4%, respectively. Most of the mature aspen stands occur in north-central and northern Alberta. Mature aspen stands achieve a minimum net merchantable volume of 50 m^3/ha at about 50 years; however, industry operators prefer net volumes of 90 m^3/ha or more, which are attained by 70 years (Woodbridge, Reed and Associates Ltd. 1985).

Older stands are more likely to have a higher incidence of decay including heart rot (Hiratsuka and Loman 1984). The age-decay relationship varies widely with genetic origin, species composition, site quality, and the fire history of stands. A major cause of the high variability in the age–decay relationship in poplar relates to the lack of clear distinction between incipient and advanced decay and between stain and incipient decay. Another cause of variability of the results is the different assessment standards in the various decay and cull surveys (Hiratsuka and Loman 1984).

The most frequently reported decay agent in Alberta aspen is white heart rot or white trunk rot (*Phellinus tremulae* (Bond.) Bond. & Boriss). Although the significance of this decay in relation to the commercial utilization of aspen is recognized, the ability to predict its extent is limited and unreliable. Stands 70–90 years of age usually have 4–5% decay[11]. In another report the decay was only slightly higher: 8.7% for aspen and 7.4% for balsam poplar in 70-year-old stands in the Rocky–Clearwater Forest (Hiratsuka and Loman 1984). Decay may increase to about 25% in stands 120–130 years old, making the trees uneconomic to harvest for most products except panelboard. Stands 140–150 years old normally have a high incidence of decay and are unusable because they are usually "broken up"; that is, the continuous canopy is broken (Northern Alberta Development Council 1985); therefore, the best trees are between 70 and 85 years of age because they are large and sound enough to harvest for most products.

The growing stock of poplar in Alberta is not evenly distributed by age class, as nearly 80% of the total volume is in mature and overmature stands (Table 6). Forty-six percent of the gross merchantable volume in pure aspen and mixed aspen–spruce cover types is in overmature stands 91 years of age and older (Table 6). Approximately one-third of these decay-prone stands are in the Slave Lake and Peace River forests. About one-third of all merchantable aspen growing stock is in the prime merchantable age of 61–90 years; the majority of these stands are in the Footner Lake, Peace River, and Grande Prairie forests. Stands 31–60 years old contain 20% of Alberta's poplar volume and occur mainly in the Slave Lake, Grande Prairie, and Peace River forests. Young poplar stands, 1–30 years old, are very limited in area. Most are in the Peace River Forest.

Pure aspen (poplar) stands are predominant in all age classes. They account for about two-thirds of all overmature stands (Fig. 3) and 90% or more of mature and younger stands.

Annual Allowable Cut for Poplar in Alberta

Alberta has 23% of Canada's hardwood (mostly poplar) annual allowable cut (AAC) (Northern Alberta Development Council 1985), which in 1987 equalled 11.4 million m^3. In comparison Alberta has 14.4 million m^3 of coniferous AAC (Fig. 4, Table 7).

The Alberta Forest Service Phase 3 Forest Inventory does not give the precise breakdown of decayed volumes (Northern Alberta Development Council 1985) but estimates that about 50% (5.7 million m^3) of Alberta's total deciduous (mostly poplar) AAC may be either too decayed or too old and broken up to be usable for the manufacture of wood products. Fortunately, only a small

[11] Personal communication from D. Morgan of Alberta Forestry, Lands and Wildlife, Edmonton, Alberta, November 1988.

Table 6. Gross total volume[a] (m^3) for aspen and other poplar[b] on provincial lands in Alberta by age class (Phase 3 Forest Inventory, Alberta Forestry, Lands and Wildlife, Alberta Forest Service, Timber Management Branch, November 1987)

Forest	Age class (years)					Total
	1–30	31–60	61–90	91–120	121+	
Athabasca	567 622.6	13 594 601.4	17 631 246.4	9 505 571.7	9 464 873.3	50 763 915.4
Bow–Crow	16 033.0	1 735 019.7	3 742 757.9	3 332 553.4	1 374 195.2	10 200 559.2
Edson	8 179.2	1 142 073.5	13 445 925.5	23 944 595.3	2 974 907.5	41 515 681.0
Footner Lake	548 776.2	20 677 387.5	63 237 254.4	29 530 311.6	11 461 836.9	125 455 566.6
Grande Prairie	20 406.2	32 206 935.9	54 836 385.4	38 703 748.4	6 424 906.2	132 192 382.1
Lac La Biche	969 940.0	16 775 433.5	17 451 121.3	22 624 464.3	10 883 345.9	68 704 305.0
Peace River	2 532 029.5	33 316 913.6	60 644 890.2	57 318 517.6	13 341 149.0	167 153 499.9
Rocky–Clearwater	910.4	741 888.1	8 627 088.5	18 816 496.6	3 333 564.3	31 519 947.9
Slave Lake	542 767.9	49 293 661.6	36 470 367.0	41 043 386.3	48 742 488.3	176 092 671.1
Whitecourt	291 514.9	5 727 753.9	18 088 959.0	39 664 738.0	11 626 931.9	75 399 897.7
Total	5 498 179.9	175 211 668.7	294 175 995.6	284 484 383.2	119 628 198.5	878 998 425.9
%	0.6	19.9	33.5	32.4	13.6	100.0

[a] Inventory of timber with 13-cm stump diameter over bark (dob) and 7-cm top diameter inside bark (dib).
[b] Includes black cottonwood and balsam poplar.

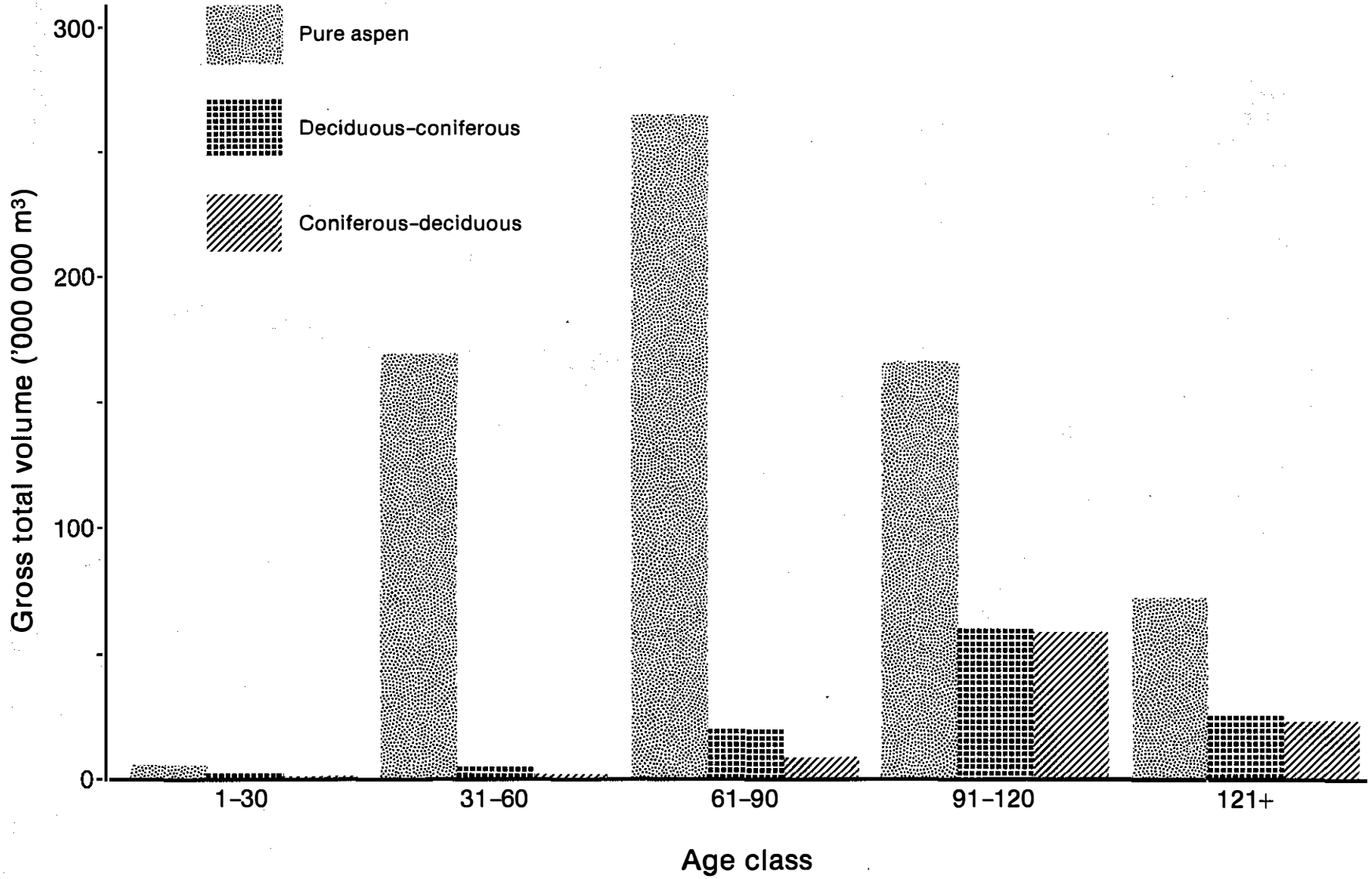

Figure 3. Gross total volume of aspen and other poplar in Alberta, 1987.

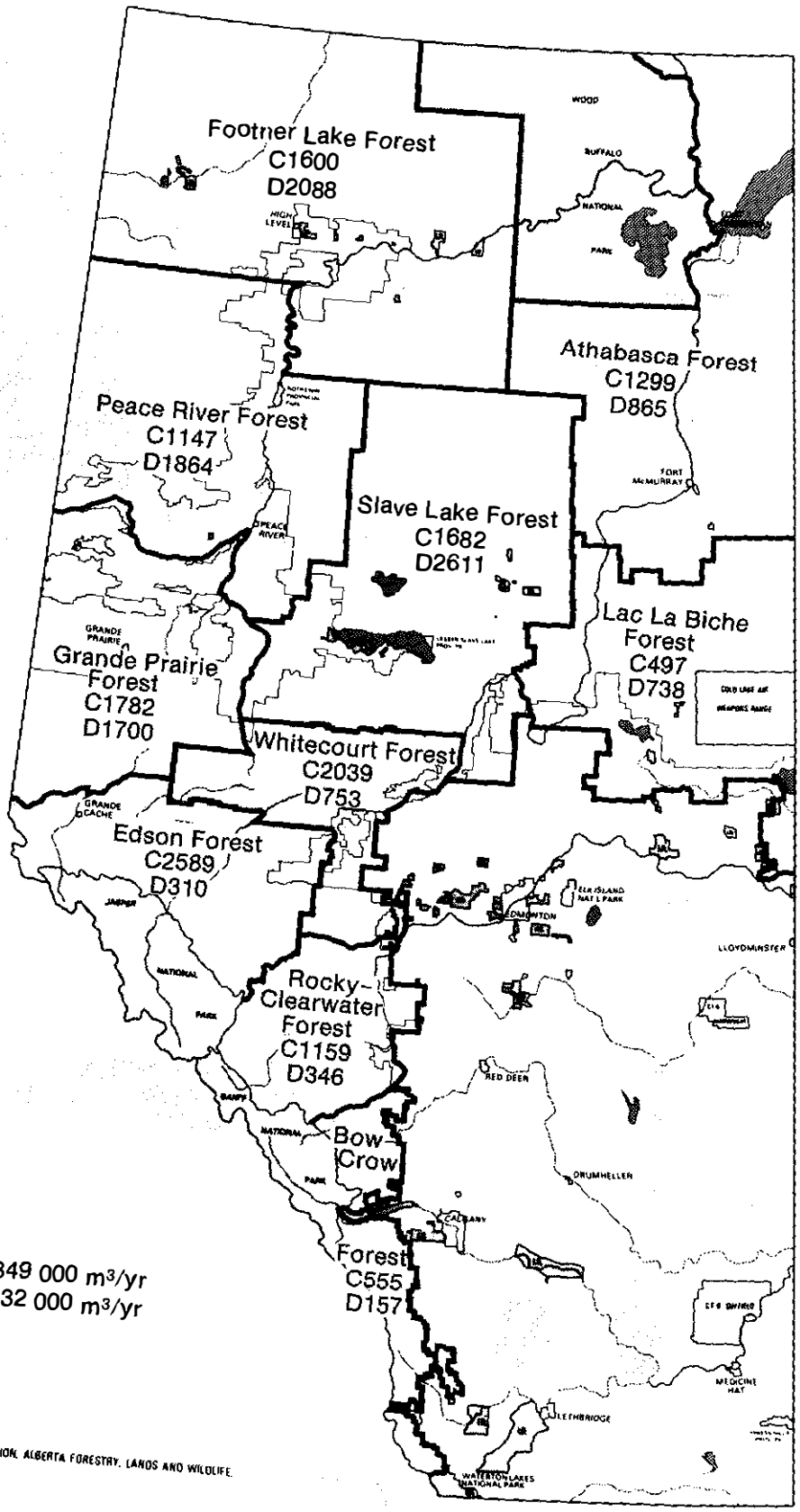

Figure 4. Annual allowable cut (AAC) of coniferous (C) and deciduous (D, mainly poplar) species in Alberta's forests, 1987 ('000 m³/yr).

Table 7. Committed and uncommitted annual allowable cuts (m^3) by forest[a] in Alberta, September 1987 (Alberta Forestry, Lands and Wildlife, September 1987)

Forest	Annual allowable cut			Committed AAC			Uncommitted AAC			Uncommitted coniferous chips
	Coniferous	Deciduous	Total	Coniferous	Deciduous	Total	Coniferous	Deciduous	Total	
Athabasca	1 298 626	864 983	2 163 609	170 751	0	170 751	1 127 875	864 983	1 992 858	65 857
Bow-Crow	555 088	156 971	712 059	464 405	0	464 405	90 683	156 971	247 654	184 300
Edson	2 589 464	310 260	2 899 724	2 359 393	115 039	2 474 432	230 071	195 221	425 292	4 373
Footner Lake	1 599 557	2 088 108	3 687 665	1 006 694	439 400	1 446 094	592 863	1 648 708	2 241 571	0
Grande Prairie	1 782 985	1 700 398	3 483 383	1 773 753	0	1 773 753	9 232	1 700 398	1 709 630	0
Lac La Biche	497 104	737 769	1 234 873	230 019	0	230 019	267 085	737 769	1 004 854	64 149
Peace River	1 147 277	1 863 575	3 010 852	462 826	687 500	1 150 326	684 451	1 176 075	1 860 526	2 145
Rocky-Clearwater	1 158 600	345 700	1 504 300	542 671	282 900	825 571	615 929	62 800	678 729	94 594
Slave Lake	1 681 782	2 611 105	4 292 887	1 169 304	899 400	2 068 704	512 478	1 711 705	2 224 183	212 477
Whitecourt	2 039 000	754 800	2 769 576	1 536 180	448 705	1 984 885	478 596	306 095	784 691	144 780
Total	14 349 483	11 433 669	25 758 928	9 715 996	2 872 944	12 588 940	4 609 263	8 560 725	13 169 988	722 675

[a] These volumes are within defined forest management units. There are substantial additional volumes of poplar available outside forest management units in the Footner Lake, Grande Prairie, Lac La Biche, Peace River, Slave Lake, and Whitecourt forests.

portion of the remaining usable 5.7 million m^3 is located more than 80 km from existing and proposed manufacturing sites. In Alberta and Saskatchewan, hauling distances for poplar of over 80 km are considered uneconomical (Woodbridge, Reed and Associates 1985). This left in 1987 about 5 million m^3 of good quality, economically accessible poplar.

In 1986-87 only 1.3 million m^3 of the deciduous timber was cut. An additional 1.6 million m^3 was committed to forest industry but not cut, leaving 8.6 million m^3 uncommitted (Table 7). Most of the 1.3 million m^3 poplar cut is currently taken from the Edson, Rocky-Clearwater, Whitecourt, Grande Prairie, and Slave Lake forests. The largest proportion of unallocated deciduous AAC is in the Slave Lake, Footner Lake, Peace River, and Grande Prairie forests (Fig. 4, Table 7). A moderate supply of the uncommitted poplar AAC capable of supporting additional industrial development is in the Athabasca, Lac La Biche, and Whitecourt forests (Table 7). Smaller quantities of unused poplar AAC occur in the Edson, Bow-Crow, and Rocky-Clearwater forests.

PRESENT UTILIZATION OF POPLAR IN NORTH AMERICA

Poplar is an important raw material in the U.S. and Canada for pulp and paper, waferboard, oriented strand board, a variety of other panelboards, dimension lumber, studs, and other products. The Lake States (Minnesota, Michigan, and Wisconsin), with only about one-half of the poplar growing stock of Alberta, are the leaders in utilization of these species in North America.

Minnesota alone has nine mills currently producing pulp and paper from poplar[12]. In addition, large amounts of poplar are utilized by two compressed fiberboard plants and in the production of lumber. Most of the poplar lumber is utilized by industry for crating or packing or specialty products; little is used in the construction industry because air-dried lumber has a tendency to warp and twist. Pallets, briquettes for fuel, firewood, cattle feed, and shavings for cattle bedding are other uses of poplar. In 1988, Minnesota harvested 95% of its 4.4 million m^3 AAC. Major users of poplar in 1988 were the nine pulp and paper mills (34%) and four oriented strand board and one waferboard mill (34%). Six percent was used for hardboard and sheathing, and the remaining 21% was used for solid wood products, special products, fuels, and other uses. About 5% of the poplar logs harvested in Minnesota are exported.

The market price of the final product and the ability to profitably utilize residues determines the end use of poplar timber. Utilization of poplar for pulp and paper brings a relatively high market price per unit of final output and produces few mill residues. Recovery of wood fiber and final product prices are also high for poplar OSB and waferboard. Lower market prices for final products and a high volume of residues are produced when poplar logs are used for dimension lumber and studs. Relatively more poplar logs are used for pulp and paper products in the United States than in Canada (Table 8). This is mainly because 1) there is less competitive pressure from softwood species in the United States than in Canada; and 2) U.S. poplar resources are closer to the large and varied industrial markets in the northeast, north, central, midwest, and eastern seaboard regions. (Carroll-Hatch (International) Ltd. 1983).

POPLAR SPECIES USED FOR WOOD PRODUCTS IN ALBERTA

Among the poplars, trembling aspen is by far the most important. Its wood is light, soft, and low in strength; the heartwood is grayish white and is not clearly differentiated from the nearly white sapwood (Hosie 1969). Aspen wood is suitable and is used for a variety of products including pulp, waferboard and OSB, lumber paneling, and matches (Table 9).

The wood of balsam poplar is light, soft, and low in strength; the heartwood is grayish brown and is sometimes tinged with red; and the sapwood is nearly white (Hosie 1969). The wood of balsam poplar is used for pulpwood (although not currently in Alberta), plywood, and feature walls.

---

[12] Personal communication from R. Dahlman of the Minnesota Dep. Nat. Resour., St. Paul, Minnesota, February 1989.

Table 8. End use of poplar logs in Canada and the U.S. Lake States, 1987

End use	Canada		U.S. Lake States[a]	
	Volume of poplar ('000 m^3)	%	Volume of poplar[b] ('000 m^3)	%
Pulp and paper[c] (TMP and bisulfite)	3 621[d]	47.8	7 920	50.8
Panelboards (waferboards and OSB) and particle boards	3 443	45.5	5 220	33.5
Special products (lath, dowels, posts, and poles) and plywood	382	5.0	396	2.5
Lumber	118	1.6	1 584	10.2
Roundwood exports	6	N/A	468	3.0
Total	7 570	100[e]	15 588	100.0

[a] Source: Personal communication from B. Smith, USDA Forest Service, North Central Experimental Station, St. Paul, Minnesota, July 1988.
[b] Does not include fuelwood, because a substantial portion is salvaged from dying or dead trees.
[c] Based on recovery of 1 t of pulp from 6 m^3 of poplar timber.
[d] Source: Personal communication from M. MacEwan, Woodbridge, Reed and Associates Ltd., Toronto, Ontario. November 1988.
[e] Does not add up due to rounding.

Table 9. Current use and suitability of poplar for various products

Product	Trembling aspen	Balsam poplar	Black cottonwood
Waferboard and OSB	0[a]	X[b]	X
Pulp and paper	0	0	0
Lumber	0	0	0
Pallets	0	0	0
Furniture	0	X	0
Veneer and plywood	0	0	0
Roof shingles	0	X	X
Cattle pellets	0	X	X
Matches	0	X	X

[a] 0 = suitable for the product.
[b] X = not currently used because the technology is unavailable or the product cannot be manufactured at all or profitably.

Pure balsam poplar, despite the excellent mechanical properties of its panels, is not used as a raw material for waferboard[13] and OSB because of difficulties in waferizing its wood. Panels made from balsam poplar swell more than the panels from aspen and birch, and the swelling is irreversible (Panning and Gertjansen 1985). It was found that 10-in. and larger logs of balsam poplar took considerably longer to thaw than aspen logs because of their high moisture content. Also, the waferizing of frozen wood resulted in low-quality wafers. Balsam poplar was also difficult to waferize because of its high gelatinous fiber content, which causes the wood fibers to stick to the knife or blade edges, reducing their effectiveness and resulting in low quality wafers with rough and fuzzy surfaces. Balsam poplar combined with aspen and black cottonwood can be used successfully in the manufacture of waferboard.

The Louisiana Pacific Ltd. waferboard mill at Dawson Creek, B.C., uses a mix of two-thirds aspen and one-third black cottonwood and balsam poplar in the production of waferboard. The mill's experience is that a good quality product can still be obtained when the share of black cottonwood and balsam poplar is increased to one-half, and the speed of the waferizing process is unaffected.

The wood of black cottonwood is light, soft, and low in strength; the heartwood is grayish brown, and the sapwood is nearly white (Hosie 1969). This species is used for pulp, veneer and plywood, furniture, and lumber. Although aspen and balsam poplar occur across the whole province, the occurrence of black cottonwood is limited to the western portion of Alberta and to British Columbia.

There are many instances of interbreeding between balsam poplar and black cottonwood, which may result in trees that are difficult to identify (Hosie 1969). Both of these poplars at maturity have heavy, deeply furrowed bark, which may discourage their wider utilization.

ANNUAL HARVEST OF POPLAR IN ALBERTA

Despite a 10-fold increase in the poplar harvest since 1980–81, the actual volume cut in Alberta in 1987–88 was small in relation to the available AAC supply (Table 10). The harvest of poplar on Crown patented lands gradually increased from 3.1% (in 1982–83) to 17.2% (in 1987–88) of the total volume cut.

This increase in poplar harvested was due to the opening of the first OSB mill, which started production in late 1983. Poplar harvests increased to 9.8% in 1985–86, mainly because of the use of aspen in trial production for bleached kraft pulp. In 1987–88 the poplar harvest further increased to 15.4% of the total volume cut due to the use of this species by the second Pelican OSB mill, which opened in January 1987, and expanded production by the third OSB mill. The harvest of poplar in the province in 1987–88 was 90.1% from Crown lands and 9.9% from private lands. On Crown lands 57.1% of the volume cut is from timber quotas, 15.3% is from Forest Management areas, 13.7% is from Commercial Timber Permits and 2.7% is from Forest Product Permits for lumber for own use or for firewood[14].

UTILIZATION OF POPLAR IN ALBERTA

In the last 20 years there has been an approximate 15-fold increase in the amount of poplar harvested and a major shift in the make-up of products manufactured from poplar in Alberta. From 1962 to 1966 an average of 85 800 m^3 of poplar logs were cut annually in Alberta; 75% was used for plywood cores and veneers, 19.5% for lumber, 5% for fuelwood, and 0.5% for pulpwood, but none was used for particle boards (Jackson 1967). From the mid-1960s to 1988 there has been a major decline in the amount of poplar used for plywood and a slight decline in the use of this species for lumber and firewood, but there has been a large increase in its use for manufacturing OSB and pulp and paper products (Table 11).

Oriented Strand Board

In 1987–88 three oriented strand boards mills in Alberta used 82% (1 050 000 m^3) of the aspen cut in the province as raw material (Appendix 5). Two-thirds of

[13] Personal communication from W. Thorp of Louisiana Pacific Ltd., Dawson Creek, British Columbia, November 1988.

[14] Personal communication from R. Dunnigan of Alberta Forestry, Lands and Wildlife, Edmonton, Alberta, November 1988.

Table 10. Annual poplar harvest in Alberta[a] as a percentage of total volume cut, 1980–88 (Alberta Energy and Natural Resources 1982–88)

Year	Total volume cut, all species (m^3)	Total volume cut, poplar (m^3)	Poplar as % of total
1980–81	5 433 301	131 777	2.4
1981–82	5 564 033	182 114	3.3
1982–83	5 560 131	172 107	3.1
1983–84	7 314 091	522 033	7.1
1984–85	6 600 271	472 301	7.2
1985–86	6 956 336	680 114[b]	9.8
1986–87[c]	8 229 874	1 285 877[b,d]	15.4
1987–88	8 345 694	1 436 050[b,d]	17.2

[a] Consists of 97% trembling aspen, 2% balsam poplar, and 1% black cottonwood. Excludes poplar harvested and used for firewood.
[b] Includes 56 500 m^3 harvested for lumber and firewood on private lands and for firewood on Crown lands.
[c] Source: Personal communication from R. Dunnigan, Alberta Forestry, Lands and Wildlife, Edmonton, Alberta, December 1988.
[d] Includes 400 000 m^3 of aspen harvested on an FMA (Forest Management Area) and purchased from private lands in 1987–88 by Pelican Mills Ltd. at Drayton Valley, Alberta, which began OSB production in January 1987.

the OSB 4 ×8 ft. panels and tongue-and-groove products are sold in the United States, mainly in California, Arizona, Washington, and Oregon. A promotional program is underway to expand OSB markets in other states. The remaining OSB panels are sold in Canada. Tongue-and-groove products are sold in Canada and the United States; 7/16-in.-thick OSB panels are sold mainly in the United States and 3/8-in.-thick mainly in Canada. The three mills and their woodland operations employ nearly 800 workers.

Pulp and Paper

Poplar utilization for pulp in Alberta in 1987–88 was limited to continued trial production for aspen bleached kraft market pulp at the Procter and Gamble Cellulose Ltd. mill in Grande Prairie. In 1987–88 the mill utilized about 91 632 m^3 of aspen and produced about 24 000 t[15] of aspen bleached kraft pulp with 83% aspen content, the balance being SPF. A new Millar Western aspen chemithermomechanical pulp mill, expected to produce 240 000 t of fully bleached flash-dried pulp annually, started production in August 1988 (fiscal year 1988–89) at Whitecourt (Appendix 6). The mill is capable of processing a variety of pulps for fluff, used in tissue, towel, and diaper grades, and pulp suitable for some printing and writing papers. When fully operational, the Millar Western mill will use about 300 000 m^3 of aspen roundwood annually and will employ about 125 full-time and 175 seasonal workers. It is planned that this mill will eventually use only aspen.

The construction of two bleached poplar kraft mills, one at Peace River by Daishowa in late 1990 and one near Athabasca by Alberta-Pacific Forest Industries Inc. by late 1991, along with a CTMP mill at Slave Lake by Alberta Energy Co. Ltd. by late 1991, will greatly increase poplar utilization in the province (Table 12). The Daishowa mill will use 70% aspen (approximately 1.2 million m^3/year) and 30% softwoods annually and will produce about 230 000 t of aspen and 110 000 t of softwood pulp. Alberta-Pacific will use 80% aspen and balsam poplar (1.8 million m^3/year) and 20% softwoods to produce 390 000 t of poplar and 106 000 t of softwood bleached kraft pulp annually. In 1995, the production of this mill will grow by 20%, when the $300-million paper mill will become fully operational. The Alberta Energy Co. will use 80% aspen (264 000 m^3/year) and 20% softwoods to produce 88 000 t of aspen and 22 000 t of softwood CTMP. Alberta Newsprint Co. Ltd. will use about 132 000 m^3 of aspen to produce newsprint starting in mid-1990. Procter and Gamble will increase their softwood-poplar bleached

[15] Personal communication from E. Jerrard of Procter and Gamble Cellulose Ltd., Grande Prairie, Alberta, June 1988.

Table 11. Number of poplar-using industries in Alberta and annual production and employment, 1987–88[a]

Industry	No. plants	Log input[b] m³	Log input[b] %	Production	Employment in mills and woodlands (person-years)
OSB mills[c]	3	1 083 133	75.4	670 MM sq. ft.[d] (3/8-in.)	789
Pulp and paper mills (1988 use)	1[e]	91 632	6.4	24 000 t aspen bleached kraft pulp[f]	70
	1[g]	129 000	9.0	43 000 t aspen bleached flash-dried pulp[h]	225
Sawmill-planing mill complexes[i] producing 100 M to 1 MM fbm	22	50 674	3.5	11.7 MM fbm	125
Sawmill-planing mill complexes[i] producing less than 100 M fbm	95	7 481	0.5	1.9 MM fbm	61
Firewood producers	Not available	41 500	2.9	Not applicable	Not available
Pallet mills[j]	2	31 300	2.2	208 600 pallets	53
Container mills	1	Not applicable	0.0	Not available	3
Furniture mills	2	430	0.0	400 computer tables 400 shelving units 200 pieces day-care furniture	43
Cattle feed pelleting mill	1	900	0.0	Aspen cattle pellets	12
Total	128	1 436 050	99.9[k]		1 381

a Sources: Alberta Forestry, Lands and Wildlife, Edmonton, Alberta, and telephone survey of poplar-using industries in Alberta by the author, December, 1988
b Includes poplar logs harvested from Alberta's Crown and private lands and logs purchased outside the province.
c Includes 400 000 m³ of aspen harvested on an FMA and purchased from private lands in 1987–88 by Pelican Spruce Mills Ltd. at Drayton Valley, Alberta, which began OSB production in January 1987.
d Includes OSB production of 250 MM sq. ft. (3/8-in.) manufactured in 1988.
e Softwood pulp mill producing aspen pulp in trial production.
f Based on average recovery of 1 t of aspen bleached kraft pulp from 4.6 m³ of aspen roundwood.
g Production of aspen bleached flash-dried pulp mill from August 1 to December 31, 1988.
h Based on average recovery of 1 t of aspen flash-dried pulp from 3.00 m³ of aspen and 2.84 m³ of spruce roundwood.
i Based on average recovery of poplar lumber in Alberta of 233 fbm/m³.
j Based on 35 pallets/M fbm of lumber (8.2 pallets/m³).
k Does not add up due to rounding.

Table 12. New and proposed poplar (aspen) pulp and paper mills in Alberta to January 1989 (Alberta Forestry, Lands and Wildlife)

Company	Location	Type of pulp[a]	Date of opening	Species utilization ('000 m³)		Annual pulp output[b] ('000 t)		Capital cost (million $)	Employment (person-years)	
				Aspen	Softwood	Aspen	Softwood		Direct	Indirect
Millar Western Industries Ltd.	Whitecourt	CTMP producing BFDP	August 1988	315	298	105	105	205	225	450
Daishowa Canada Co. Ltd.	Peace River	BKP	September 1990	1194	630	630[c]	110	500	630	1260
Alberta Energy Co. Ltd.	Slave Lake	CTMP	January 1991	264	53	88	22	168	122	245
Alberta-Pacific Forest Industries Inc.	Athabasca	BKP	October 1991	1800	360	390[d]	106	1300	1300	2600
Procter and Gamble Cellulose Ltd.	Grande Prairie	BKP	January 1992	690	690	150	150	400	600	1200
Alberta Newsprint Company Ltd.	Whitecourt	CTMP newsprint	August 1990	132	500	44	176	360	375	750
Total				4395	2531	1407	669	2933	3252	6505

[a] BFDP = bleached flash-dried pulp; BKP = Bleached kraft pulp; CTMP = chemithermomechemical pulp.
[b] Separate aspen and softwood pulp production.
[c] Based on average recovery of 1 tonne of BKP from 5.19 m³ of aspen and 5.73 m³ of softwood.
[d] Also utilizing balsam poplar.

kraft production (50% aspen) by 150 000 t by 1992, using an additional 690 000 m³ AAC of aspen. With these expansions and the Daishowa and Alberta-Pacific mills reaching full capacity by 1992, most of the poplar (mainly aspen) AAC will be utilized; most of this will be used for pulp and paper. Additional capacity to produce pulp and paper will be obtained by expansion of the newly built mills between 1993 and 1998 (McDougall 1989).

Lumber

In 1987–88 the 117 active[16] small sawmills in Alberta[17] produced 13.6 million fbm of poplar dimension lumber, boards, and timbers (Table 11, Appendix 8). The majority of them were in the Whitecourt (29 sawmills), Grande Prairie (21), Edson (20), Rocky-Clearwater (17) and Lac La Biche (12) forests. A few sawmills operated in other forests: Peace River (8 sawmills), Slave Lake (6), and Bow-Crow (4). Twenty-four of these sawmills each produced more than 100 M fbm, and 93 sawmills produced less than 100 M fbm of lumber. All of these mills were established as small softwood sawmills sawing poplar and white birch for retail sales or for manufacturing. They include part-time operators and farmers producing lumber for the local construction market or for their own use. The majority of the sawmill operators cut their logs from quota, dispositions local, and commercial timber permits; however, about one-half of them utilize poplar from private lands, salvage operations, and purchase. The average log-hauling distance from woodlands to the sawmills was 16 km for private landowners and 60 km for timber permit and quota holders. The products manufactured included rough dimension lumber, studs, and timbers that were mainly sold locally as construction lumber or for manufacturing into secondary products.

Small sawmill operators agree that wood from aspen and poplar is excellent but requires special drying and preserving for some applications, such as corral posts. A few buyers utilize poplar dimension lumber for the construction of houses, barns, graineries, garages, and other utility buildings.

A number of sawmill operators sold aspen and poplar sawdust and shavings for animal beddings. The low capital cost of small poplar sawmills and their efficiency allow them to utilize poplars profitably despite the relatively low demand and prices for poplar solid wood products. In 1987–88 the sawmills generated approximately 185 person-years of employment and utilized about 58 155 m³ or 4.0% of all poplar cut in Alberta (Table 11).

Secondary Products

This large and varied product group includes the remanufacturing of dimension lumber, boards, and timbers into pallets, containers, furniture, pipe, racks, pipeline skids, dunnage, timber blocking for residential trailers and oil tanks, truck boxes, and construction cribbing. Some of these products are manufactured by secondary poplar-using mills into furniture and containers, and other products are manufactured by sawmills and planing mills.

Some operators use poplar for tongue-and-groove paneling for feature walls and flooring for houses and barns, and black cottonwood for truck and trailer decking and other applications. One manufacturer builds aspen day-care furniture, school shelving, and computer tables, and at least two operators produce poplar and birch doors, windows, and frames. By late 1990, Northem Forest Industries Ltd. in Lac La Biche will use about 20% aspen (about 46 000 m³ annually) in manufacturing pallets and furniture stock. Trials with preserved aspen shingles (Fig. 5) are promising. A complete list of products and their markets are given in Appendix 9.

Firewood

In 1987–88 about 30 000 m³ of poplar firewood was cut on private lands, predominantly for home use by the landowners. In the same year, about 11 500 m³ of poplar firewood was cut on commercial timber lands[18] and sold as cordwood for $30–35/m³ ($80–90 per cord) at stump or delivered to the buyers.

Poplar firewood is most frequently cut in mixed-wood spruce–aspen forest types on Crown lands or as part of land clearing for agriculture on private lands.

Aspen Cattle Pellets

An alfalfa pelleting mill in central Alberta produces a small volume of fiber-rich aspen pellets for cattle feed.

---

16 Thirty-four potentially productive sawmills are listed in Appendix 7.

17 From records of Alberta Forestry, Lands and Wildlife, Edmonton, Alberta, 1988, and telephone survey of Alberta sawmills by the author.

18 Personal communication from R. Dunnigan of Alberta Forestry, Lands and Wildlife, Edmonton, Alberta, June 1988.

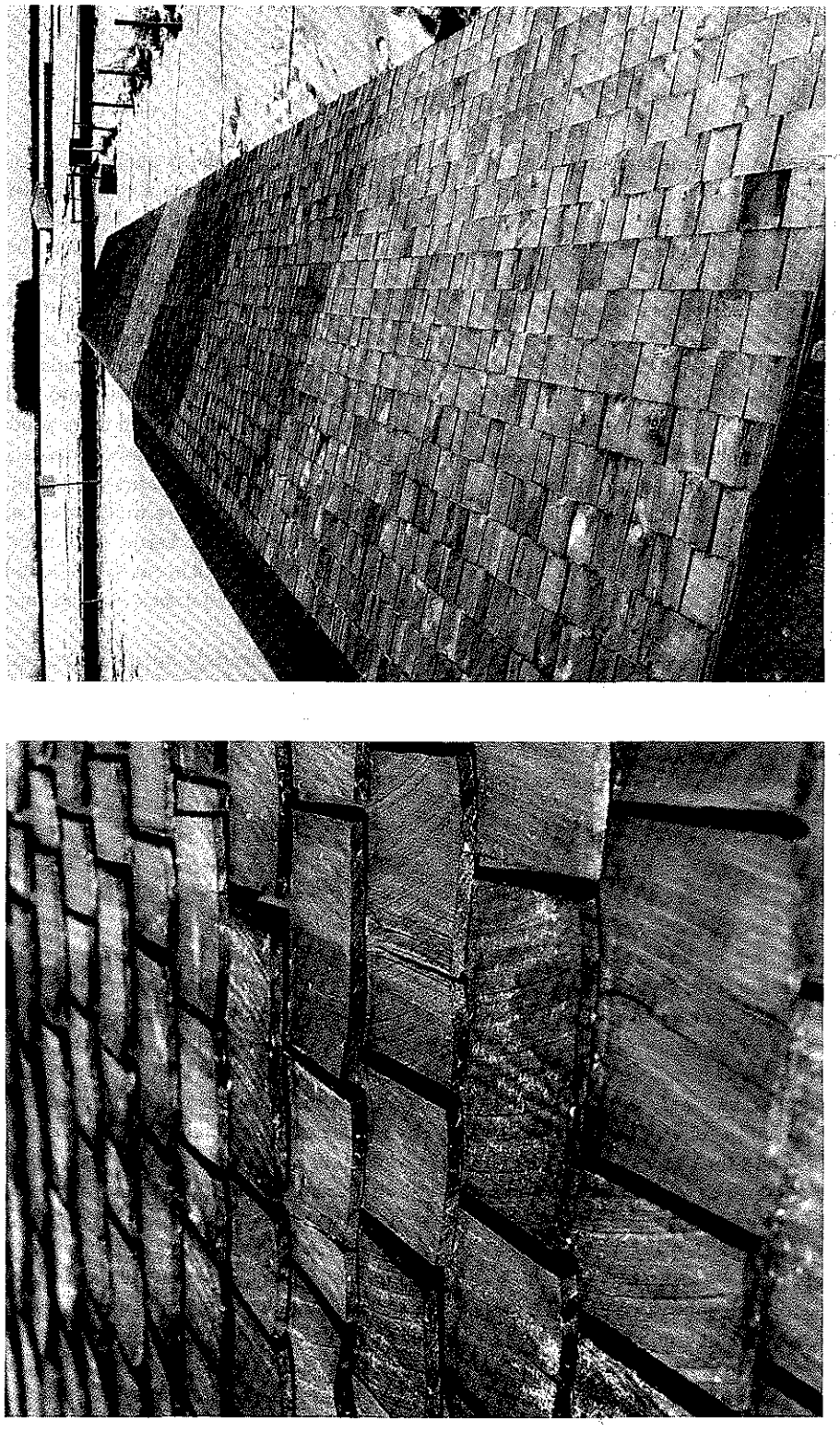

Figure 5. Preserved aspen shingles.

Aspen wood is first chipped and then ground in the pelleting mill. The aspen pellets contain added protein nutrients, vitamins A, D, E, and minerals to provide a balanced, fiber-rich cattle diet[19]. The pellets are an excellent feed supplement for cattle, but before expanding aspen pellet production, tests are underway to evaluate the effects of this feed on the reproduction of cattle.

SUMMARY

In 1987–88, poplar in Alberta made up one-third of the forest growing stock but only about 17.2% of the total harvested volume. Although the volume used is relatively small, poplar utilization increased aproximately 10-fold between 1980 and 1988. The market price of the product and the efficient utilization of residues determines the end use of harvested poplar. The utilization of poplar for pulp and paper is important in the United States and brings a relatively high market price per unit of output and minimum mill residues. The utilization of poplar fiber is high in the United States and Canada, as are the prices for OSB and waferboard. Lower market prices for final products and a relatively high volume of residues are obtained using poplar logs for dimension lumber, timbers, and studs.

Three producing OSB mills in Alberta utilize about four-fifths of all the poplar harvested. They represent the most important use of poplar today. This is shown by the rapid increase in production and the substitution of OSB for plywood and waferboard in the marketplace for side-wall sheathing, roofing, flooring, and other applications.

Poplar bleached sulfate market pulp, market mechanical pulp, newsprint, and printing and writing papers were identified for Alberta as economically viable and readily marketable. Bleached sulfate pulp is well suited for the manufacturing of fine papers, tissues, sanitary products, and business and specialty papers. Future mills in Alberta may market aspen bleached kraft pulp to Japan and South Korea, who presently import about 42% of their supply from Brazil. Pulp and paper mill complexes offer good potential for a profitable industrial utilization of poplar in Alberta. Alberta poplar pulp and paper mills, despite their higher capital costs (17%), would be very competitive with those in the southern United States because of lower stumpage rates and a 60% lower cost of energy.

The utilization of poplar for solid wood products has faced technical problems and stiff competition from the still abundant and higher value softwood (spruce, pine, and fir) products. The production of poplar lumber can be profitable from high quality poplar stands near the mills and close to lumber markets. Despite the low demand for poplar solid wood products, 117 small sawmills in Alberta produced about 13.6 million fbm of poplar dimension lumber, timbers, and boards in 1987–88. The low capital costs of these sawmills and their efficient operations allow them to utilize poplar profitably despite low prices for poplar solid wood products. Dimension lumber is frequently manufactured into pallets, pipeline skids, pipe racks, dunnage, and other products. Poplar lumber is used in the construction of houses, garages, and other utility buildings. Poplars are utilized for tongue-and-groove paneling and feature walls, doors and windows, flooring for houses and barns, and truck and trailer decking. A furniture mill in central Alberta builds aspen day-care furniture, school shelving, and computer tables.

There are currently no active poplar veneer and plywood mills in Alberta; however, the sizable production of poplar plywood in Ontario and Quebec used for exterior sheathing today suggests some potential for this product in Alberta.

In summary, the potential for increased poplar utilization in Alberta is very good. The poplar harvest can be increased and still remain within the AAC for economically accessible poplar. A chemithermomechanical pulp and paper mill came on stream in 1988. There is room for expansion for other pulp products such as bleached kraft, mechanical pulp, newsprint, and various bleached and brown pulps and papers. Mechanical pulp and paper products will likely increase in importance in the next decade because of lower production costs and environmentaly safer manufacturing processes. Several new bleached kraft pulp, TMP, and paper mills will be constructed in the next few years. Some of these newly built mills will be expanded between 1993 and 1998. Although there is still some room for expansion in manufacturing conventional pulp and paper products, a major orientation of the forest industry in Alberta in the future will be the manufacture of high value-added secondary pulps, papers, and other products. By the year 2000, all of Alberta's poplar AAC may be used.

---

[19] Personal communication from M. Smith of Southview Fibretech Ltd., Edmonton, Alberta, November 1988.

Regeneration and silviculture of poplar stands following harvest is the forester's dream—simple and cheap. Several major challenges remain: 1) to expand the profitable use of balsam poplar, especially in pulps and panelboards; 2) to use efficiently the abundant poplar sawmill residues; 3) to develop markets for conventional and high value-added secondary products.

ACKNOWLEDGMENTS

The author wishes to thank the owners and management personnel of the participating mills for providing information on their operations. Thanks are extended to Dr. J.M. Powell for his encouragement during the data collection and the preparation of this report. Appreciation is extended to D. Morgan, J. Scheffer, and D. Scatcherd of Alberta Forestry, Lands and Wildlife in Edmonton for providing the statistics on poplar inventory in Alberta. Special thanks are due to R. Dunnigan and C. Bamsey of Alberta Forestry, Lands and Wildlife in Edmonton for providing the 1987–88 listing of harvested poplar volumes from provincial lands. The assistance of J. Mrklas in the collection and compilation of additional data and the useful review suggestions of Dr. I.E. Bella and R.A. Bohning, all of the Northern Forestry Centre, Forestry Canada, Edmonton, are gratefully acknowledged.

REFERENCES

Alberta Energy and Natural Resources. 1982-86. Annual report 1980-81, 1981-82, 1982-83, 1983-84, 1984-85. Alberta For. Serv., Edmonton, Alberta.

Alberta Forestry, Lands and Wildlife. 1987. Annual report 1985-86. Alberta For. Serv., Edmonton, Alberta.

Alberta Forestry, Lands and Wildlife. 1988. Alberta Public Lands. Publication 1-201.

Bamsey, C. 1988. Directory of primary wood-using industries in Alberta, 1988. Alberta For., Lands Wild., Edmonton, Alberta.

Canada Mortgage and Housing Corporation. 1986. Building material evaluation report—"Sturdi-Wood." Ottawa, Ontario. Rep. 10556.

Foodand Agriculture Organization of the United Nations. 1973. Guide for planning pulp and paper enterprises. FAO For. For. Prod. Studies No. 18. Rome, Italy.

Hiratsuka, Y.; Loman, A.A. 1984. Decay of aspen and balsam poplar in Alberta. Environ. Can., Can. For. Serv., North. For. Res. Cent., Edmonton, Alberta. Inf. Rep. NOR-X-262.

Hosie, R.C. 1969. Nativetrees of Canada. 7th edition. Can. Dep. Fish. For., Can. For. Serv., Ottawa, Ontario.

Jackson, C. 1967. Poplar utilization in the province of Alberta. Pages 39-47 *in* The future for poplar utilization. Proceedings from Industrial Wood Products Seminar, Nov. 8-9, 1966. Dep. Ind. Wood Prod. Branch, Ottawa, Ontario.

Minnesota Department of Natural Resources. 1986. Aspen current use, 1984-85. St. Paul, Minnesota.

National Hardwood Lumber Association. 1982. Rules for the measurement and inspection of hardwood and cypress. Memphis, Tennessee.

Northern Alberta Development Council. 1985. Utilization of hardwoods in northern Alberta: Seminar report. Report of the Seminar on Utilization of Hardwoods in Northern Alberta, held April 24-25, 1985, Whitecourt, Alberta. North. Alberta Dev. Counc., Peace River, Alberta.

Ondro, W.J.; Karaim, B.W.; Bohning, R.A.; Stevenson. G.R. 1980. Directory of primary wood-using industries in Alberta. Environ. Can., Can. For. Serv., North. For. Res. Cent., Edmonton, Alberta. Inf. Rep. NOR-X-220.

Panning, D.J.; Gertjejansen. R.O. 1985. Balsam poplar as a raw material for waferboard. For. Prod. J. 35(5):48-54.

Statistics Canada. 1981-86. Canadian forestry statistics, Cat. No. 11-202. Logging, Cat. No. 25-201. Manufacturing industry of Canada, Cat. No. 31-203. Survey of production, Cat. No. 61-202. Ottawa, Ontario.

Unpublished Reports

Carroll-Hatch (International) Ltd. 1983. Market assessment for poplar products. 3 vols. Edmonton, Alberta. Prepared for governments of Canada, Alberta, and British Columbia.

Ekono Consultants Ltd. 1986. Study of chemithermomechanical pulp (CTMP) production potential for Alberta. Can. For. Serv., North. For. Cent., Edmonton, Alberta. Unpublished report.

Jaakko Pöyry International Oy. 1983. Competitiveness of the Albertan vs. the U.S. southeastern forest industry. Edmonton, Alberta. Prepared for the Alberta Departments of Economic Development and Energy and Natural Resources.

McDougall, F.W. 1989. Speech to Grande Prairie Chamber of Commerce, Grande Prairie, Alberta, January 21, 1989.

Morgan, D.J. 1987. Alberta Forest Service Inventory Methods. Pages 67-70 *in* Aspen Quality Workshop. Proceedings of a workshop held February 12, 1987, Edmonton, Alberta. Prepared under the Canada–Alberta Forest Resource Development Agreement.

Widman Management Ltd. 1985. Canada's forest industry—markets '85-88. Vancouver, B.C. Unpublished report.

Widman Management Ltd. 1986. Canada's forest industry—markets '86-89. Vancouver, B.C. Unpublished report.

Widman Management Ltd. 1987. Canada's forest industry—markets '87-90. Vancouver, B.C. Unpublished report.

Widman Management Ltd. 1988. Canada's forest industry—markets '88-92. Vancouver, B.C. Unpublished report.

Widman Management Ltd. 1989. Canada's forest industry—markets '89-93. Miller Freeman Publications Inc., San Francisco, California. Unpublished report.

Woodbridge, Reed and Associates Ltd. 1985. Utilization of hardwoods in Northern Alberta: Summary report. Prepared for the Northern Alberta Development Council, Peace River, Alberta.

Zsuffa, L.; Boufford, D.; Leggatt, M.A. 1979. Poplar biomass production and utilization. Environ. Can., Can. For. Serv., Petawawa Natl. For. Inst., Chalk River, Ont. ENFOR Project P-139. Unpublished report.

APPENDIX 1

CANADIAN WAFERBOARD AND OSB MILL CAPACITY, DECEMBER 1988[a]

Company	Location	Product	MM sq.ft./year (3/8-in. basis)
Atlantic Waferboard Ltd.	Chatham, New Brunswick	WB	186
Forpan Ltd.	Val D'Or, Quebec	WB (OSB)[b]	160
Grant Waferboard	Englehard, Ontario	WB (OSB)	150
Great Lakes Forest Products Ltd.	Thunder Bay, Ontario	WB	120
Lousiana Pacific Ltd.	Dawson Creek, British Columbia	WB	260
MacMillan Bloedel Ltd.	Thunder Bay, Ontario	WB	150
	Hudson Bay, Saskatchewan	WB	128
Malette Waferboard Ltd.	Grande-Mere, Quebec	WB (OSB)	130
Normick-Perron Inc.	La Sarre, Quebec	WB (OSB)	80
	Chamford, Quebec	WB	250
Pelican Spruce Mills, Division	Edson, Alberta	OSB	250
of Weyerhauser Canada Ltd.	Drayton Valley, Alberta	OSB	250
Waferboard Corporation Ltd.	Champlain, Quebec	WB	128
	Timmins, Ontario	WB	80
Weldwood of Canada Ltd.	Longlac, Ontario	WB	170
	Slave Lake, Alberta	OSB	170
Total			2 412

[a] Source: Personal communication, R. Hammerstedt, Widman Management Ltd., Vancouver, British Columbia, February 1989.

[b] WB (OSB) = Waferboard mills with the capacity to produce oriented strand board.

APPENDIX 2

SIZES AND SPANS[a] FOR ORIENTED STRAND BOARD "STURDI-WOOD"[b,c]

Panel thickness (in.)	Spans (in.)		
	Wall	Roof	Floor
1/4	16		
5/16	24		
3/8	24	24	
7/16	24	24	16
15/32	24	32	16
1/2	24	32	16
5/8	24	40	20
5/8	24		20
3/4	24	48	24
3/4	24		24
1-1/8	24		48

[a] Edge support may be necessary to achieve maximum spans as listed.
[b] "Sturdi.Wood" is the trade name for Pelican Spruce Mills wood products.
[c] Source: Canada Mortgage and Housing Corporation 1986 and American Plywood Association 1986.

APPENDIX 3

SELECTED METRIC (SI) UNITS AND CONVERSION FACTORS[a]

Imperial		Metric (SI)
1 inch	=	2.54 cm
1 mile	=	1.609 km
1 acre	=	0.405 ha
1 cord (85 cu. ft. solid wood)	=	2.407 m^3 coniferous, 2.010 m^3 deciduous
1 cu. ft.	=	0.028 m^3
1 cunit[b] (100 cu. ft. solid wood)	=	2.832 m^3 (roundwood)
1 ton (2000 lb.)	=	0.907 t
1 cord (stacked) per acre	=	8.956 m^3 (stacked) per ha
1000 board feet	=	4.29 m^3 (roundwood)
1 M foot board measure (fbm)	=	1.623 m^3 (lumber)
1 bone dry unit (BDU) wood chips (2400 lb.)	=	1090 kg
1 sq. ft. sheet product (1/2-in. basis)	=	1.180 m^2 (1-mm basis)
1 sq. ft. sheet product (1/16 in. basis)	=	0.147 m^2 (1-mm basis)

[a] Source: Environment Canada 1974. Selected metric (SI) units and conversion factors for Canadian forestry. Environ. Can., Ottawa, Ontario.
[b] 1 cunit (100 cu. ft.) = 660 fbm (roundwood)

APPENDIX 4

GRADES OF HARDWOOD (POPLAR) LUMBER IN THE UNITED STATES[a]

FAS means first and second grade. The lumber or boards must be a minimum of 6 in. wide and 8 ft. long. This grade must yield 91.66% of clear-face cutting.

S & S means select and better grade. The lumber or boards must be a minimum of 4 in. wide and 6 ft. long. Minimum clear-cuttings must be 4 in. wide and 5 ft. long or 3 in. wide and 7 ft. long.

#1C means No. 1C common grade. The width of the lumber or boards must be a minimum of 3 in. wide and 4 ft. long. Minimum cutting must be 4 in. wide and 3 ft. long.

#2A means No. 2A common grade. The width of the lumber or boards must be a minimum of 3 in. wide and 4 ft. long. The proportion of clear cutting in this grade is smaller than in grade No. 1C.

#3A means No. 3A common grade. The width of the lumber or boards must be a minimum of 3 in. wide and 4-16 ft. long. Number 3A grade admits pieces that will yield 33.3% clear-face lumber cutting not less than 3 in. wide and 2 feet long.

#3B means No. 3B common grade. The width of the lumber or boards must have 25% sound cutting not less than 1.5 in. wide containing clear-cutting not less than 36 sq. in. There is no limit to the number of cuttings.

---

[a] Source: U.S. National Hardwood Lumber Association. 1986. Rules for measurement and inspection of hardwood and cypress lumber. Memphis, Tennessee.

APPENDIX 5

ALBERTA PANELBOARD MILLS

PELICAN SPRUCE MILLS, DIVISION OF WEYERHAEUSER CANADA LTD.

ADDRESS:	Head office: 11550 - 154 St. Edmonton T5M 3N8	Mill: Box 2378 Edson T0E 0P0
TELEPHONE:	(403) 452-5395	(403) 420-6139 (403) 723-6963
CONTACTS:	Al Owen Derek Stewart Rod Dempster Norm Denney	

WOOD SUPPLY:

SOURCE:	Edson and Whitecourt forests
TENURE:	Quota and purchased timber from private lands
SPECIES:	Trembling aspen
ANNUAL HARVEST (1987-88):	400 000 m^3
AVERAGE HAUL:	55 km

1988 PRODUCTION[a]:	250 MM sq. ft. (3/8-in.)
MAJOR PRODUCTS:	Oriented strand board (for sizes see Appendix 2)
MAJOR EQUIPMENT: (Mill and yard)	Shanenck forming line Dieffenbacher press 2—980 caterpillars 2—966 caterpillars
CAPITAL COST:	$46 million

EMPLOYMENT: (person-years)	Woodlands	150.0
	Mill	113.0
	Office	7.0

MARKETS:	California, Arizona, Washington, and Oregon 65%; British Columbia, Saskatchewan, and Manitoba, 25%; Alberta, 10%

---

[a] Projected annual production for 1988 calendar year.

PELICAN SPRUCE MILLS, DIVISION OF WEYERHAEUSER CANADA LTD.

ADDRESS:	Head office: 11550 - 154 St. Edmonton T5M 3N8	Mill: Box 2339 Drayton Valley T0E 0M0
TELEPHONE:	(403) 452-5395	(403) 542-3267
CONTACTS:	Al Owen Derek Stewart Rod Dempster Norm Denney	
WOOD SUPPLY:		
SOURCE:	Rocky-Clearwater and Whitecourt forests	
TENURE:	Quota and purchased timber from private lands	
SPECIES:	Trembling aspen	
ANNUAL HARVEST (1987-88):	400 000 m^3	
AVERAGE HAUL:	55 km	
1988 PRODUCTION[a]:	250 MM sq. ft. (3/8-in.)	
MAJOR PRODUCTS:	Oriented strand board (for sizes see Appendix 2)	
MAJOR EQUIPMENT: (Mill and yard)	Shanenck forming line Dieffenbacher press 2—980 caterpillars 2—966 caterpillars	
CAPITAL COST:	$46 million	
EMPLOYMENT: (person-years)	Woodlands 150.0 Mill 113.0 Office 7.0	
MARKETS:	California, Arizona, Washington, and Oregon 65%; British Columbia, Saskatchewan, and Manitoba, 25%; Alberta, 10%	

[a] Projected annual production for 1988 calendar year.

WELDWOOD OF CANADA LTD.

ADDRESS:	Box 630 Slave Lake T0G 2A0
TELEPHONE:	(403) 849-4333
CONTACTS:	Norm Anderson Bernie Heuvelman
WOOD SUPPLY:	
SOURCE:	Slave Lake Forest
TENURE:	FMA 100%
SPECIES:	Trembling aspen
ANNUAL HARVEST (1987-88):	250 000 m^3
PURCHASE:	43 000 m^3
AVERAGE HAUL:	48 km
1988 PRODUCTION[a]:	170 MM sq. ft. (3/8-in.)
MAJOR PRODUCTS:	Oriented strand board[b]
MAJOR EQUIPMENT: (Mill and yard)	Shanenck forming line Washington Ironworks press
CAPITAL COST: (Mill and yard)	$25 million
EMPLOYMENT: (person-years)	Woodlands 125.0 Mill 111.0 Office 13.0
MARKETS:	California, Arizona, Washington, Oregon, and Colorado 60%; British Columbia, Saskatchewan, and Manitoba, 30%; Alberta, 10%

---

a Projected annual production for 1988 calendar year.

b Converted to oriented strand board mill from waferboard mill effective September 1, 1986.

APPENDIX 6

ALBERTA PULP AND PAPER MILL

MILLAR WESTERN INDUSTRIES LTD.[a]

ADDRESS:	Head office: Box 60 Whitecourt T0E 2L0
TELEPHONE:	Edmonton: (403) 486-2444 Whitecourt: (403) 778-2221
CONTACTS:	Edmonton: MacMillar, Peter Knorr Whitecourt: Hugh Richardson, Edward Vermiere, Ormond Smith
WOOD SUPPLY:	
SOURCE:	Whitecourt Forest
TENURE:	Quota 100%
SPECIES:	Trembling aspen 78% Residue of white spruce and lodgepole pine 22%
ANNUAL HARVEST (1987–88):	Aspen 200 000 m^3
PURCHASE:	20 000 m^3
AVERAGE HAUL:	72 km
1988 PRODUCTION[b]:	43 000 t[c] (From Aug. 1 to Dec. 31, 1988)
MAJOR PRODUCTS:	Aspen bleached flash-dried pulp
MAJOR EQUIPMENT: (Mill and yard)	Hymac refiners Flakt flush dryers Sunds finishing
CAPITAL COST:	$200,000
EMPLOYMENT: (person-years)	Woodlands 100.0 Mill 105.0 Office 20.0
MARKETS:	United States 50%; Pacific Rim 30%; Europe (mainly U.K.) 20%

---

[a] Started production in August 1988.
[b] Annual production capacity, 210 000 t.
[c] Based on average recovery of 1 t of aspen flash-dried pulp from 3.00 m^3 of aspen and 2.84 m^3 of spruce roundwood.

APPENDIX 7

ALBERTA POTENTIALLY PRODUCTIVE POPLAR SAWMILLS[a] BY FOREST

NAME	ADDRESS	FACILITIES
	EDSON FOREST	
BARRASS, CLARENCE	Box 7, Site 4, R.R. 1 Peers TOE 1WO (403) 693-2206	Sawmill; 42-in. circular headsaw
BECKER, HERBERT	Peers TOE 1WO (403) 693-2181	Sawmill; 42-in. circular headsaw
DEED CREEK FARMS	Box 2241 Edson TOE OPO (403) 723-2940	Sawmill; 48-in. circular headsaw
MATHESON, JACK	Box 2293 Edson (403) 723-2496	Sawmill; 48-in. circular headsaw
MELLERSH, PETER	Box 160 Edson TOE OPO (403) 723-2215	Sawmill; 48-in. circular headsaw, planer
RONDEAU, JOE	Box 2349 Edson TOE OPO (403) 723-2477	Sawmill; 46-in. circular headsaw
SCHRAM, MILFRED	Box 933 Edson TOE OPO (403) 723-6751	Sawmill; 48-in. circular headsaw
SEIBEL, GEORGE	Box 913 Edson TOE OPO (403) 693-2462	Sawmill; 46-in. circular headsaw, planer
WHITE, WALTER	R.R. 1 Peers TOE 1WO (403) 693-2753	Sawmill; 48-in. circular headsaw

NAME	ADDRESS	FACILITIES
	GRANDE PRAIRIE FOREST	
ABBOTT, CALVIN	General Delivery Debolt TOH 1BO	Sawmill; 44-in. circular headsaw
AIRTH PARTNERS	Box 323 Debolt TOH 1BO (403) 957-3788	Sawmill; 48-in. circular headsaw
CROWTHER, EDWARD	Box 763 Valleyview TOH 2NO (403) 524-2431	Sawmill; 44-in. circular headsaw
FELL, DON	Box 11 Valleyview TOH 3NO (403) 524-2002	Sawmill; 46-in. circular headsaw
GAGNON, ANDREW	New Fish Creek TOH 2SO (403) 524-2264	Sawmill; 52-in. circular headsaw
ISSAC, PETER	Crooked Creek TOH OYO (403) 957-2630	Sawmill; 48-in. circular headsaw
NEILSEN, DOUGLAS	Box 476 Valleyview TOH 2NO (403) 524-2149	Sawmill; 52-in. circular headsaw
YARMEY, YARIS and CAULDRON, SYDNEY	Box 938 High Prairie TOE 1EO (403) 523-2461	Sawmill; 48-in. circular headsaw
	LAC LA BICHE FOREST	
TUZYK, LLOYD	8410 - 45 Street Edmonton T6B 2N6 (403) 466-3243	Sawmill; 48-in. circular headsaw

NAME	ADDRESS	FACILITIES
	ROCKY-CLEARWATER FOREST	
BOSS TIMBER PRODUCTS	Box 1603 Drayton Valley TOE OMO (403) 542-6507	Sawmill; 48-in. circular headsaw
DALKE, LAVERNE	Carnwood TOC OWO (403) 542-2203	Sawmill; 42-in. circular headsaw
FITCH, MERV	Box 415 College Heights Lacombe TOC 1SO (403) 782-6621	Sawmill; 44-in. circular headsaw, planer
HOUGH, JOHN	Box 161 Breton TOC OPO (403) 696-2354	Portable sawmill; 50-in. circular headsaw
JACKSON, NORMAN	Box 311 Breton TOC OPO (403) 696-2381	Sawmill; 48-in. circular headsaw
REIMER, AUGUST	R.R. 1 Bluffton TOC OMO (403) 843-6628	Sawmill; 48-in. circular headsaw
SEVER, CLIFFORD	R.R. 2 Rocky Mountain House TOM 1TO (403) 845-6767	Sawmill; 44-in. circular headsaw
SCHWINGEL, GEORGE	R.R. 2 Bluffton TOM OMO (403) 843-6476	Sawmill; 40-in. circular headsaw
	SLAVE LAKE FOREST	
NICHOLS, CLINT	Grouard Mission T0G 1C0 (403) 751-2136	Sawmill; 48-in. circular headsaw

NAME	ADDRESS	FACILITIES
	WHITECOURT FOREST	
CALDER, DAVID	Box 28 Whitecourt TOE 2LO (403) 648-3966	Sawmill; 48-in. circular headsaw, planer
HATTONFORD TIMBER	Box 17, Site 1, R.R. 1 Niton Junction T0E 1S0 (403) 795-2665	Sawmill; 48-in. circular headsaw
KIEHLBAUCH, JERRY	Carrot Creek TOE OGO (403) 795-2184	Sawmill; 48-in. circular headsaw, planer
LIND, ALBERT	Box 95 Niton Junction TOE 1SO (403) 795-2380	Sawmill; 42-in. circular headsaw
PIMM, JOHN	General Delivery Mayerthorpe TOE 1NO (403) 786-4657	Sawmill; 48-in. circular headsaw
SCHARR, ROBERT	Box 284 Wildwood TOE 2MO (403) 325-2161	Sawmill; 42-in. circular headsaw
SPINK, GRADEN	Blue Ridge TOE OBO (403) 648-2132	Sawmill; 48-in. circular headsaw
SHUPAC, ROY	Box 562 Mayerthorpe T0E 1N0 (403) 786-4398	Sawmill, 48-in. circular headsaw

a Includes all sawmills that are not operating but that produced poplar lumber in the last 3 years and are likely to resume production.

APPENDIX 8

DIRECTORY OF PRIMARY POPLAR-USING INDUSTRIES IN ALBERTA, 1987–88

Data for this directory were collected by contacting all sawmills and planer mills producing poplar products[1] listed in the directory of primary wood-using industries (Ondro et al. 1980). New poplar or softwood-poplar mill operators were found in the sawmill records of the Alberta Forest Service and from industry contacts. The industry survey, which includes data from fiscal year 1987–88, was done through telephone interviews and was supplemented by some on-site visits from June to December 1988. Updated and verified outputs of softwood products for the 1987 calendar year are provided in another directory (Bamsey 1987).

The directory is divided into two sections. Section A lists sawmill–planing mill complexes producing more than 100 M fbm annually; Section B lists those producing less than 100 M fbm annually.

Entries in both sections are listed alphabetically by administrative forest. Production totals (including softwood where applicable), wood supply source, mill facilities, average log haul distance, employment, products, and marketing information are given.

The following are explanations of the terms describing wood supply sources (Alberta Forestry, Lands and Wildlife 1988):

CTP (Commercial Timber Permit)—A short-term (1- to 5-year) disposition authorizing the harvest of coniferous or deciduous timber. These permits are sold at public auction. The successful bidder must deposit a performance guarantee and pay annual holding and protection charges. A reforestation levy must also be paid. Harvesting can start only upon approval of the operating plan by the Alberta Forest Service.

FMA (Forest Management Agreement)—A long-term (20-year, renewable) agreement that gives a company the right to manage, on a sustained yield basis, the timber on the agreement area. This includes the rights and obligations of the company to establish, grow, and harvest the timber according to a management plan approved by the Minister.

Grazing lease—A disposition of public lands up to 10 years on areas normally not suitable for cultivation. Leases are limited to the size of area that can sustain 600 head of cattle on a 12-month basis.

LTP (Local Timber Permit)—A short-term (1- to 2-year) timber disposition that gives an operator the right to harvest a small volume (up to 750 m^3) of coniferous or deciduous timber. Typically, an LTP is a local disposition of saw timber or firewood for personal use.

Private—Timber obtained from private holdings, such as small woodlots and farms.

Purchase—Timber sold and purchased in any phase (e.g., stumpage, harvested at roadside, delivered to mill), and in any form (e.g., tree length, cut in sections, finished product).

Quota (Timber Quota Certificate)—Provides timber operators with a long-term (up to 20 years) right to harvest a share of the AAC (annual allowable cut) in a management unit. In return for a secure wood supply, the quota holder has a responsibility for reforestation and pays holding and protection charges based on the AAC.

Salvage (Industrial Salvage)—A short-term disposition of timber from lands temporarily or permanently removed from the forest cover. This may include land cleared of timber for roads, mill sites, oil well sites, seizmic lines, and other nonforestry uses.

---

[1] Includes aspen, balsam poplar, and black cottonwood.

A. Sawmill–planing mill complexes producing more than 100 M fbm annually

Name, address, and telephone	Production 1987–88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
BOW–CROW FOREST									
BOUVETTE, DONALD Box 9, Site 13, R.R. 1 Innisfail T0M 1A0 (403) 728-3823	300	2 700	Private: 90% LTP: 10%	Sawmill; 48-in. circular headsaw	96	2.0	2.5	Dimension lumber: 20% Corrals and boards: 20% Pipeline skids: 60%	Wholesale: 100%
EDSON FOREST									
ERITH TIE CO. Box 1600 Edson T0E 0P0 (403) 723-2426	100	9 812	Quota: 100%	Sawmill; 50-in. circular headsaw, resaw, planer	90	1.0	1.0	Poplar planking and blocking: 60% Tank stands for oil companies: 30% Drag line matting: 10%	Oil companies: 60% Wholesalers: 30% USA: 10%
NORTH ROAD LUMBER LTD. Box 1186 Edson T0E 0P0 (403) 723-2287	150	6	LTP: 100%	Sawmill; 48-in. circular headsaw	16	1.0	1.5	Dimension lumber: 80% Boards: 20%	Wholesalers: 70% Local construction: 30%
NYSSEN, JOHN Box 735 Edson TOE OPO (403) 723-2456	200	20	Private: 100%	Sawmill; 42- and 48-in. circular headsaw	1	1.5	1.5	Dimension lumber: 50% Timbers: 20% Pallets: 10% Pipeline skids: 20%	Remanufacturing into pallets: 95% Local construction: 50%

GRANDE PRAIRIE FOREST

BAIN, GEORGE General Delivery Elmworth T0H 1J0 (403) 354-8594	328	17	LTP and CTP: 100%	Portable sawmill; 50-in. circular headsaw	1	2.0	2.5	Boards 1 × 4, 1 × 6: 100%	Wholesalers and retailers: 100%
THIESSEN, ARVID Box 5, Site 6, R.R. 1 Crooked Creek T0H 0Y0 (403) 957-2396	190	10	LTP and CTP: 100%	Sawmill; 56-in. circular headsaw	40	1.0	1.5	Dimension lumber: 70% Boards: 30%	Wholesalers and retailers: 100%
WOHLGEMUTH, WAYNE Box 148 Crooked Creek T0H 0Y0 (403) 957-2330	100	0	LTP: 50% Private: 50%	Sawmill; 50-in. circular headsaw	8	1.0	1.0	Dimension lumber: 50% Timbers: 30% Oilfield timber: 30%	Wholesalers and retailers: 80% Local construction: 20%

LAC LA BICHE FOREST

ONCIUL, WILLIAM Box 17, Site 2 St. Lina T0A 2Z0 (403) 726-2213	150	1 500	Private: 100%	Sawmill; 48-in. circular headsaw	40	1.0	1.5	Dimension lumber for furniture and corrals: 40% Pallets: 30% Oil field blocking: 30%	Wholesalers: 80% Local construction: 20%

ROCKY-CLEARWATER FOREST

CENTENNIAL LUMBER Box 122 Lodgepole T0E 1K0 (403) 894-2144	3 947	5 002	Quota: 90% Salvage: 10%	Sawmill; 48-in. circular headsaw	25	15.0	16.0	Dimension lumber: 60% Timbers: 20% Boards: 20%	Wholesalers: 100%

Continued on next page

Name, address, and telephone	Production 1987-88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
HERITAGE FOREST PRODUCTS LTD. Box 202 Red Deer T4N 5E8 (403) 346-9110	380	0	Private: 80% Purchase: 20%	Sawmill; 48-in. circular headsaw	80	2.0	3.0	Dimension lumber for furniture: 70% Boards for pallets: 30%	Remanufacturing: 70% Wholesalers: 30%
KLIMEC, SAM R.R. 4 Ponoka TOC 2HO (403) 783-2626	437	0	Private: 80% Grazing lease: 20%	Sawmill; 48-in. circular headsaw	0.5	2.5	3.0	Feature walls, fencing: 60% Dimension lumber: 20% Horse barn flowing: 20%	Local construction: 80% Remanufacturing: 20%
ROCKY WOOD PRESERVERS LTD. Box 1537 Rocky Mountain House T0M 1T0 (403) 845-2212	100	11 422	Salvage: 80% Quota: 10% CTP: 10%	Sawmill; 48-in. circular headsaw	70	1.0	1.0	Pipeline skids: 80% Stands for oil tanks: 20%	Wholesalers and retailers: 100%
SLAVE LAKE FOREST									
BREWSTER CONSTRUCTION LTD. General Delivery Red Earth Creek T0G 1X0 (403) 551-1203	324	30 013	Quota: 100%	Sawmill; 48-in. circular headsaw	55	2.0	2.0	Dimension lumber: 80% Pallets: 20%	Remanufacturing into pallets: 80% Local construction: 20%

WHITECOURT FOREST

CHITTICK SAWMILL Box 586 Mayerthorpe TOE 1NO (403) 325-2107	250	1 981	CTP: 70% LTP: 15% Salvage: 15%	Sawmill; 46-in. circular headsaw	70	2.0	3.0	Timbers: 65% Pipeline skids, construction cribbing, and dimension lumber: 25% Boards: 10%	Retailers, Spruce Grove and Edmonton: 70% Oil companies: 30%
HEINTZ, HERB Box 158 Niton Junction TOE 1SO (403) 795-2307	220	100	Private: 50% Salvage: 50%	Sawmill; 46-in. circular headsaw	15	1.0	2.0	Blocking and bridging: 80% Pallets and corrals: 20%	Local construction: 50% Remanufacturing: 50%
JOHN'S LUMBER & POST Box 1865 Drayton Valley TOE OMO (403) 542-2802	525	300	LTP: 50% Private: 50%	Sawmill; 48-in. circular headsaw planer, post preserver	5	2.0	3.0	Dimension lumber: 60% Timbers for blocking: 20% Boards: 10% Treated posts: 10%	Remanufacturing into pallets: 80% Local construction: 10% Retailers: 10%
PHILLIPS, JOE Box 171 Wildwood TOE 2MO (403) 325-2057	337	200	Private: 50% LTP: 50%	Sawmill; 48-in. circular headsaw	16	2.0	2.0	Dimension lumber for boxes: 50% Boards for pallets: 50%	Wholesalers: 100%
REHN, L.H. LUMBER LTD. Box 150 Wildwood TOE 2MO (403) 894-2125	1 500	699	Quota: 100%	Sawmill; 48-in. circular headsaw	40	5.0	7.0	Dimension lumber: 60% Boards: 40%	Wholesalers: 90% Local construction: 10%
SCHMIEDER FOREST PRODUCTS Box 405 Mayerthorpe TOE 1NO (403) 786-4781	712	183	CTP: 70% Purchase: 30%	Sawmill; 48-in. circular headsaw	20	3.5	4.0	Furniture lumber: 20% Boards for pallets: 80%	Retailers: 90% Local construction: 10%

Continued on next page

Name, address, and telephone	Production 1987–88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
UNGER'S LUMBER AND POSTS Box 1865 Drayton Valley TOE OMO (403) 542-2802	450	200	Private: 80% Purchase: 20%	Sawmill; 48-in. circular headsaw	15	2.5	3.0	Pipeline skids, 4 × 6 in. by 4 ft.: 90% Dimension lumber: 10%	Wholesalers: 90% Local construction: 10%
VANKOSKY, ERNEST Box 317 Mayerthorpe T0E 2MO (403) 786-4649	800	200	Private: 90% LTP: 10%	Sawmill; 48-in. circular headsaw	8	4.0	5.0	Timbers, 4 × 4 to 10 × 10 in.: 95% Aspen furniture planks: 5%	Pipe storage lumber: 65% Pallets, construction cribbing: 20% Pipe dunnage: 15%
WIEGE, GILBERT Box 1104 Whitecourt T0E 2L0 (403) 778-4953	170	0	LTP and CTP: 100%	Sawmill; 56-in. circular headsaw	25	1.0	1.5	Dimension lumber of special sizes: 70% Timbers: 30%	Export for solid core veneer door to Japan: 70% Pipeline skids and pallets: 30%

B. Sawmill–planing mill complexes producing less than 100 M fbm annually

Name, address, and telephone	Production 1987-88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
BOW–CROW FOREST									
NEILSON BROS. FARMING LTD. Box 159 Cremona T0M 0R0 (403) 637-3944	4	100	LTP: 50% Purchase: 50%	Sawmill; 48-in. circular headsaw	16	0.25	0.25	Dimension lumber: 75% Timbers: 40% Barn flooring: 3% Boards: 2%	Wholesale and remanufacturing: 70% Local construction: 30%
JASMAN, H.O. R.R. 2 Sundre T0M 1X0 (403) 638-4158	5	35	LTP: 50% Private: 50%	Sawmill; 48-in. circular headsaw	7	0.25	0.25	Dimension lumber: 50% Timbers: 30% Boards: 20%	Own use: 70% Local construction: 30%
SPRAY LAKES MILLS LTD. Box 100 Cochrane T0L 0L0 (403) 932-2234	15	51 937	LTP: 100%	Sawmill; 48-in. circular headsaw	15	0.25	0.25	Dimension lumber: 75% Preserved posts: 25%	Wholesale and retail: 70% Local construction: 30%
EDSON FOREST									
A AND V LOGGING Peers T0E 1W0 (403) 693-3776 (403) 795-2545	17	17 949	LTP: 40% Salvage: 50% Purchase: 10%	Sawmill; 48-in. circular headsaw, resaw planer, chipper	32	0.25	0.25	Dimension lumber: 90% Boards: 10%	Wholesalers for furniture: 90% Local construction: 10%

Continued on next page

Name, address, and telephone	Production 1987–88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
BARRASS, CLARENCE R.R. 1 Peers T0E 1W0 (403) 693-2206	1	1	LTP: 100%	Sawmill; 48-in. circular headsaw	15	0.25	0.25	Dimension lumber: 70% Boards: 30%	Own use: 100%
BRANDLE, ADAM General Delivery Edson T0E 0P0 (403) 693-3962	80	5	Private: 100%	Sawmill; 44-in. circular headsaw	10	0.75	0.75	Dimension lumber: 60% Pallet boards: 20% Timbers: 10% Pipeline skids: 10%	Remanufacturing: 70% Local construction: 30%
CARMARTA, NELLO R.R. 1 Peers T0E 1W0 (403) 693-2195	47	16	Private: 100%	Sawmill; 48-in. circular headsaw	1	0.50	0.50	Boards: 50% Corrals: 20% Dimension lumber: 10% Flooring: 10% Sheathing: 10%	Local construction: 85% Wholesalers: 85%
CLOSE, WILLARD Edson T0E 0P0 (403) 723-7160	5	0	Salvage: 100%	Sawmill; 48-in. circular headsaw	16	0.25	0.25	Timbers for trailer blocking: 100%	Local construction: 80% Own use: 20%
ERICKSON, EDWARD R.R. 1 Peers T0E 1W0 (403) 693-2204	9	1	Private: 80% LTP: 20%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Dimension lumber: 10% Corrals: 70% Firewood: 20%	Own use: 100%
GARDINER, RICHARD Box 2616 Edson T0E 0P0 (403) 693-2375	15	60	Private: 80% CTP: 20%	Sawmill; 46-in. circular headsaw	2	0.25	0.25	Dimension lumber: 20% Skids and planks for oil companies: 80%	Oil companies: 80% Own use: 20%

HELLECKSON, MELVIN R.R. 1 Peers T0E 1W0	8	17	LTP and CTP: 100%	Sawmill; 48-in. circular headsaw	10	0.25	0.25	Dimension lumber: 70% Boards: 30%	Local construction: 50% Own use: 50%
FORBES, FRANK General Delivery Peers T0E 1W0 (403) 693-2461	2	0	LTP and CTP: 100%	Sawmill; 48-in. circular headsaw	5	0.25	0.25	Dimension lumber: 65% Timbers: 20% Boards: 15%	Local construction: 100%
KLUT, ERNEST Box 457 Edson T0E 0P0 (403) 693-2520	10	30	Private: 80% LTP: 20%	Sawmill; 44-in. circular headsaw	1	0.25	0.25	Dimension lumber: 25% Boards: 25% Timbers: 25% Firewood: 25%	Own use: 100%
MELLERSH, P. and DAUBLE, C. Box 160 Edson T0E 0P0 (403) 693-2215	4	2	Private: 50% LTP and CTP: 50%	Sawmill; 46-in. circular headsaw	15	0.25	0.25	Dimension lumber: 70% Boards: 30%	Local construction: 50% Own use: 50%
NORDVEDT, VERNON Box 1852 Edson T0E 0P0 (403) 723-2680	10	20	LTP: 100%	Sawmill; 48-in. circular headsaw	20	0.25	0.25	Timbers: 65% Dimension lumber: 20% Railway ties: 15%	Wholesalers: 90% Local construction: 10%
PEEPCHUK, LAWRENCE Box 1003 Edson T0E 0P0 (403) 723-7464	45	0	LTP and CTP: 100%	Sawmill; 48-in. circular headsaw	5	0.50	0.50	Dimension lumber: 60% Boards: 30% Timbers: 10%	Wholesalers: 80% Local construction: 20%

Continued on next page

Name, address, and telephone	Production 1987–88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
ROBERTS, GLYN Box 6, R.R. 1 Peers T0E 1W0 (403) 693-2415	30	75	LTP and CTP: 80% Purchase: 20%	Sawmill; 42-in. circular headsaw	8	0.50	0.50	Timbers: 50% Boards: 30% Fences: 20%	Wholesalers: 95% Local construction: 5%
ROSARIO, ROY Box 905 Edson T0E 0P0 (403) 723-2281	14	0	LTP and CTP: 100%	Sawmill; 46-in. circular headsaw	8	0.25	0.25	Dimension lumber: 70% Timbers: 30%	Retailers: 60% Local construction: 40%
TIEGEN & ORWELL Box 1078 Edson T0E 0P0 (403) 723-2107	75	45	Private: 100%	Sawmill; 48-in. circular headsaw	16	0.75	0.75	Dimension lumber: 60% Timbers: 25% Boards for pallets: 15%	Wholesalers: 100%
VETTER, DAVID General Delivery Peers T0E 1W0 (403) 693-2215	2	19	LTP and CTP: 100%	Sawmill; 44-in. circular headsaw	1	0.25	0.25	Dimension lumber: 50% Farm skids: 30% Boards: 20%	Own use 100%
GRANDE PRAIRIE FOREST									
ASH, PAUL General Delivery Gordondale T0H 1Y0 (403) 353-2192	60	88	LTP: 80% Salvage: 20%	Sawmill; 44-in. circular headsaw	3	0.75	0.75	Dimension lumber: 60% Poplar planks: 20% Pallets: 20%	Local construction: 50% Remanufacturing: 50%

CARON, GUS Sunset House T0H 3H0 (403) 524-2225	15	40	LTP: 100%	Sawmill; 44-in. circular headsaw	9	0.25	0.25	Poplar corrals: 60% Dimension lumber: 30% Boards: 10%	Local construction: 70% Own use: 30%
CUNNINGHAM, DAVID Box 272 Beaverlodge T0H 0C0 (403) 354-8369	27	27	LTP and CTP: 100%	Portable sawmill; 48-in. circular headsaw	32	0.25	0.25	Dimension lumber: 100%	Own use: 100%
DUPONT, STANLEY General Delivery Goodfare T0H IT0 (403) 356-2485	28	0	LTP: 50% Private: 50%	Sawmill; 44-in. circular headsaw	2	0.25	0.25	Dimension for corrals: 70% Boards for cattle sheds: 20% Timbers: 10%	Local construction: 80% Own use: 20%
HOMMY, WILFRED Box 9, Site 1, R.R. 1 Beaverlodge T0H 0C0 (403) 354-8562	4	146	LTP and CTP: 100%	Sawmill; 48-in. circular headsaw	8	0.25	0.25	Dimension lumber: 60% Boards: 30% Timbers: 10%	Local construction: 60% Own use: 40%
JANZEN, JOHN Box 386 Hythe T0H 2C0 (403) 356-2520	6	30	LTP and CTP: 100%	Sawmill; 48-in. circular headsaw	40	0.25	0.25	Dimension lumber: 60% Boards: 40%	Own use: 100%
NIEMI LUMBER AND CUSTOM SAWING Box 103 Valleyview T0H 3N0 (403) 524-2548	4	267	LTP and CTP: 100%	Sawmill; 36- and 48-in. circular headsaws	50	0.25	0.25	Boards: 60% Dimension lumber: 20% Timbers: 20%	Local construction: 90% Retailers: 10%

Continued on next page

Name, address, and telephone	Production 1987–88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
PETTYJOHN, ROY General Delivery Beaverlodge T0H 0C0 (403) 354-8814	13	52	LTP and CTP: 100%	Sawmill; 48-in. circular headsaw	32	0.25	0.25	Dimension lumber: 60% Boards: 25% Fencing: 10% Barn floors: 5%	Local construction: 80% Own use: 20%
SCOTT, ROBERT R.R. 1 Crooked Creek T0H 0Y0 (403) 957-2424	30	114	LTP: 50% Private: 50%	Sawmill; 48-in. circular headsaw	10	0.50	0.50	Poplar dimension lumber: 60% Pallets: 40%	Local construction: 75% Retailers: 15% Remanufacturing: 10%
SERVATIUS, HARRY R.R. 1 Grovedale T0H 1X0 (403) 766-2432	10	10	Private: 100%	Sawmill; 46-in. circular headsaw	0.5	0.25	0.25	Dimension lumber: 70% Boards: 30%	Local construction: 50% Own use: 50%
SIPE, BROCK R.R. 2 Grande Prairie T8V 2Z9 (403) 532-6599	90	210	LTP and CTP: 100%	Portable sawmill; 48-in. circular headsaw	50	1.00	1.00	Dimension lumber: 30% Planks for corral fencing: 30% 3-in. lumber used for rig matting for setting oil tank and rigs: 30%	Local construction: 100%
STAMM, LAWRENCE Box 146 Hythe T0H 2C0 (403) 356-2419	24	136	Private: 90% CTP: 10%	Portable sawmill; 30-in. circular headsaw	1	0.25	0.25	Dimension lumber: 20% Boards for tongue and groove paneling and furniture: 70% Timbers from balsam poplar: 10%	Local construction: 80% Own use: 20%

STRYDOHORST, JOHN La Glace T0H 2J0 (403) 568-2434	2	60	Private: 100%	Sawmill; 48-in. circular headsaw	8	0.25	0.25	Dimension lumber: 70% Corrals: 20% Boards: 10%	Local construction: 80% Own use: 20%
TAYLOR, DAVID Box 1028 New Fish Creek T0H 2S0 (403) 524-2563	5	15	LTP: 100%	Sawmill; 50-in. circular headsaw	1	0.25	0.25	Dimension lumber: 50% Timbers: 20% Boards: 20% Fencing: 10%	Local construction: 100%
TOERPER, KARL Box 4, Site 2, R.R. 3 Grande Prairie T8V 5N3 (403) 532-6591	25	475	LTP and CTP: 100%	Portable sawmill; 50-in. circular headsaw	2	0.25	0.25	Dimension lumber: 15% Corrals: 10% Pipeline skids, oil tank stands: 75%	Pipelines skids for oil companies: 75% Custom sawing for farmers: 25%
WALTERS, SAM Crooked Creek T0H 0Y0 (403) 957-2607	10	0	LTP: 50% Private: 50%	Sawmill; 48 in. circular headsaw	30	0.25	0.25	Dimension lumber: 70% Timbers: 20% Boards: 10%	Local construction: 70% Own use: 30%
WILLIAMS, DANNY General Delivery Grovedale T0H 1X0 (403) 766-2568	12	5	LTP and CTP: 100%	Sawmill; 42-in. circular headsaw	1	0.25	0.25	Dimension lumber: 10% Fences: 15% Drilling skids and planks for oil companies: 75%	Oil companies: 75% Own use: 25%
ZENNER, RICHARD Box 416 Debolt T0H 1B0	30	0	Private: 100%	Sawmill; 48-in. circular headsaw	32	0.50	0.50	Dimension lumber: 60% Timbers: 20% Trailer decks: 10% Fencing: 10%	Local construction: 100%

Continued on next page

Name, address, and telephone	Production 1987–88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
LAC LA BICHE FOREST									
DIESEL'S TIMBER PRODUCTS Box 1013 Lac La Biche T0A 2C0 (403) 623-7733	15	50	LTP: 100%	Sawmill; 48-in. circular headsaw	10	0.25	0.25	Dimension lumber: 50% Pipeline skids: 50%	Oil companies: 80% Local construction: 20%
DUNMORE WOOD PRESERVERS 527 – 7th Street S.W. Medicine Hat T1A 1K2 (403) 527-8730	2	2 000	LTP and CTP: 100%	Wood treating plant and sawmill	65	0.25	0.25	Dimension lumber: 50% Posts and poles: 50%	Wholesalers: 50% Local construction: 50%
FIRST NATIONS FOREST PRODUCTS LTD. Box 1769 Grande Centre T0A 1T0 (403) 594-7183	99	0	CTP: 100%	Sawmill; 12-, 30-, and 46-in. circular headsaw	96	1.00	1.00	Log houses: 80% Roof shakes: 20%	Local construction: 100%
KARPIUK, MICHAEL General Delivery Radway T0A 2V0 (403) 736-2134	8	0	LTP: 100%	Sawmill; 48-in. circular headsaw	16	0.25	0.25	Dimension lumber: 70% Timbers: 30%	Local construction: 70% Own use: 30%

KEHEWIN FOREST PRODUCTS Box 218 Bonnyville T0A 0L0 (403) 826-3333	5	245	LTP and CTP: 100%	Sawmill; 46-in. circular headsaw	10	0.25	0.25	Dimension lumber: 60% Boards: 30% Timbers: 10%	Local construction: 100%
LEMAY, GEORGE General Delivery Lac La Biche T0E 2C0 (403) 798-2320	5	25	Private: 100%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Dimension lumber for corrals: 90% Boards: 10%	Own use: 70% Local construction: 30%
MACOR, ROY Box 1244 Lac La Biche T0E 2C0 (403) 623-7520	10	10	Private: 100%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Dimension lumber for corrals and utility buildings: 100%	Own use: 80% Local construction: 20%
ONCIUL, ARNOLD Rich Lake T0A 2X0 (403) 726-2104	10	750	LTP: 100%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Dimension lumber for furniture: 80% Timbers: 10% Boards: 10%	Wholesalers: 90% Local construction: 10%
TKACHUK, WILLIAM & SON McRae TOA 2CO (403) 726-2149	26	240	LTP: 100%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Poplar dimension lumber: 60% Pipeline skids: 20% Poplar shingles: 20%	Local construction: 60% Oil companies: 40%
TCHIR, STEVE Box 56 Vilna T0A 3L0 (403) 636-2879	2	550	LTP: 100%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Dimension lumber for corrals: 70% Boards: 30%	Own use: 80% Local construction: 20%

Continued on next page

Name, address, and telephone	Production 1987-88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
WAKULCHYK, JOHN Iron River T0A 2A0 (403) 826-5088	2	600	LTP: 60% Salvage: 40%	Sawmill; 52-in. circular headsaw	40	0.25	0.25	Dimension lumber for planking: 50% Pipeline skids, (6-in.): 30% Truck decking: 20%	Local construction: 60% Retailers: 40%
PEACE RIVER FOREST									
BOUCHER BROS. LUMBER LTD. Box 3180 Peace River T0H 2X0 (403) 322-3947	6	25 000	LTP and CTP: 60%	Sawmill; 48-in. circular headsaw	160	0.25	0.25	Dimension lumber: 90% Boards: 10%	Wholesalers: 90% Local construction: 10%
DOMINIK, VICTOR Box 590 Grimshaw T0H 1W0 (403) 971-2208	12	55	LTP: 70% Private: 30%	Sawmill; 48-in. circular headsaw	5	0.25	0.25	Dimension lumber: 70% Timbers: 20% Boards: 10%	Local construction of graineries, corrals, sheds, flooring, furniture, and shiplaps: 100%
MARCOUX, ROBERT and SON General Delivery McLennan (403) 324-2202	5	100	LTP: 100%	Sawmill; 48-in. circular headsaw	20	0.25	0.25	Dimension lumber for furniture planks: 80% Timbers: 20%	Retailers: 100%
MCGREGOR, GERALD Box 112 Dixonville T0H 1E0 (403) 971-2342	2	15	LTP and CTP: 100%	Sawmill; 48-in. circular headsaw	10	0.25	0.25	Dimension lumber: 65% Boards: 35%	Own use: 100%

MILLER, DAVID Box 307 Hines Creek T0H 2A0 (403) 494-2222	26	250	LTP: 100%	Sawmill; 48-in. circular headsaw	3	0.25	0.25	Dimension lumber: 70% Boards for truck boxes, flooring, and window frames: 20% Timbers: 10%	Local construction: 80% Retailers: 20%
MORGAN, JOHN General Delivery Worsley T0H 3W0 (403) 685-2602	6	14	LTP and CTP: 100%	Sawmill; 46-in. circular headsaw	5	0.25	0.25	Dimension lumber: 60% Boards: 30% Timbers: 10%	Local construction: 70% Own use: 30%
PAUL'S SAWMILL and PLANER Box 1258 Peace River T0H 2X0 (403) 624-3245	14	280	Salvage: 80% LTP: 20%	Sawmill; 48-in. circular headsaw, planer	60	0.25	0.25	Tongue and groove interior paneling: 50% Flooring, black cottonwood decking, furniture: 50%	Local construction: 100%
ROLLING, DONALD Box 23 Bluesky T0H 0J0 (403) 835-2127	12	28	Private: 50% LTP and CTP: 50%	Sawmill; 46-in. circular headsaw	2	0.25	0.25	Dimension lumber: 70% Boards: 20% Balsam poplar for barn floors: 30%	Local construction: 50% Own use: 50%
ROCKY-CLEARWATER FOREST									
ERICKSON, NELS Box 973 Drayton Valley T0E 0M0 (403) 542-2493	2	28	LTP and CTP: 100%	Sawmill; 46-in. circular headsaw	15	0.25	0.25	Dimension lumber: 60% Boards: 30% Timbers: 10%	Own use: 100%
GIESBRECHT, ABE R.R. 4 Rimbey T0C 2J0 (403) 843-3622	80	20	Private: 100%	Sawmill; 42-in. circular headsaw	36	0.50	0.50	Dimension lumber: 100%	Local construction: 90% Own use: 10%

Continued on next page

Name, address, and telephone	Production 1987–88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
GRAY, FRANKLIN Box 9, Site 1, R.R. 2 Rocky Mountain House T0M 1T0 (403) 845-6766	3	20	Quota: 75% LTP: 25%	Sawmill; 50-in. circular headsaw	5	0.25	0.25	Dimension lumber: 70% Timbers: 20% Boards: 10%	Remanufacturing: 90% Local construction: 10%
HUGHES, WALTER Box 87 Winfield T0C 2X0 (403) 682-2160	10	30	Private: 100%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Dimension lumber: 100%	Local construction: 70% Own use: 15% Corral planking: 15%
HYLAND, LINO R.R. 2 Warburg T0C 2T0 (403) 848-2415	3	50	Private: 100%	Portable sawmill; 42-in. circular headsaw	1	0.25	0.25	Dimension lumber: 70% Boards: 30%	Local construction: 80% Own use: 20%
FORRESTER, ROBERT R.R. 3 Rocky Mountain House T0M 1T0 (403) 722-2121	3	4	Private: 100%	Sawmill; 48-in. circular headsaw, planer	32	0.25	0.25	Dimension lumber: 40% Furniture planks: 20% Timbers: 20% Firewood: 20%	Local construction: 100%
FOSTER, FRANK Box 81 Alder Flats T0C 0A0 (403) 388-2148	2	8	Private: 100%	Sawmill; 42-in. circular headsaw	Wdls. 0.5 Mill 0.5	0.25	0.25	Dimension lumber: 70% Timbers: 30%	Local construction: 100%

LIKENS, HAROLD R.R. 2 Bluffton T0C 0M0 (403) 843-6000	15	30	Private: 100%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Dimension lumber: 70% Timbers: 20% Boards: 10%	Local construction: 100%
McFADDEN, GORDON R.R. 2 Bluffton T0C 0M0 (403) 843-6040	5	3	Private: 100%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Dimension lumber: 70% Timbers: 30%	Local construction: 80% Remanufacturing: 20%
MURPHY, NELLE R.R. 3 Rocky Mountain House T0M 1T0 (403) 845-4569	5	15	Private: 100%	Sawmill; 48-in. circular headsaw	2	0.25	0.25	Dimension lumber: 60% Timbers: 20% Fencing: 20%	Local construction: 100%
O'CONNOR, RONALD R.R. 2 Rocky Mountain House T0M 1T0 (403) 845-6667	50	20	Private: 75% LTP: 25%	Sawmill; 48-in. circular headsaw	16	0.50	0.50	Dimension lumber: 50% Timbers: 40% Boards: 10%	Local construction: 90% Own use: 10%
PEDRAZZINI, ITALO Box 9, R.R. 2 Rocky Mountain House T0M 1T0 (403) 845-6143	5	2	Private: 100%	Sawmill; 44-in. circular headsaw	2	0.25	0.25	Dimension lumber: 60% Timbers: 20% Fencing: 20%	Local construction: 100%
WASSER, ADOLF Buck Creek T0C 0S0 (403) 542-2596	3	7	Private: 100%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Dimension lumber: 80% Timbers: 20%	Own use: 100%

Continued on next page

Name, address, and telephone	Production 1987–88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
SLAVE LAKE FOREST									
BOWZALO, TOM Smith T0G 2B0 (403) 675-9101	10	100	LTP: 100%	Portable sawmill; 42-in. circular headsaw	40	0.25	0.25	Dimension lumber: 70% Timbers: 20% Boards: 10%	Local construction: 100%
CRAWFORD, FRANK Box 98 Athabasca T0G 0B0 (403) 675-4330	5	2 507	Quota: 100%	Sawmill; 48-in. circular headsaw	18	0.25	0.25	Fencing: 50% Corrals: 30% Truck decking (3 × 10, 3 × 12 ft.): 20%	Local construction: 70% Retailers: 30%
LEAVITT, DOUG Swan Hills T0G 0M0 (403) 333-2050	10	0	Private: 100%	Sawmill; 44-in. circular headsaw	2	0.25	0.25	Dimension lumber for corrals: 100%	Own use: 100%
RUXTON, KEN Box 67 Fawcett T0G 0Y0 (403) 954-2126	15	140	LTP: 20% Private: 80%	Portable sawmill; 48-in. circular headsaw	1	0.25	0.25	Dimension lumber for pallets: 100%	Remanufacturing: 80% Local construction: 20%
VANDERWELL CONTRACTORS (1971) LTD. Box 415 Slave Lake T0G 2A0 (403) 849-3824	3	47 998	Quota: 80% Private: 15% Industrial salvage: 3% LTP: 2%	Sawmill; 50-in. circular headsaw	32	0.25	0.25	Roundwood: 100%	Supplied to Weldwood for manufacturing of OSB

WHITECOURT FOREST

ARCHIBALD, WILLIAM Carrot Creek T0E 0G0 (403) 795-2661	15	25	Private: 50% LTP: 50%	Sawmill; 48-in. circular headsaw	0.5	0.25	0.25	Dimension lumber: 50% Boards: 30% Corrals: 20%	Remanufacturing: 70% Local construction: 20% Own use: 10%
BANNISTER, H.E. Box 283 Mayerthorpe TOE 1NO (403) 786-4653	52	303	LTP: 70% Purchase: 20% Salvage: 10%	Sawmill; 48-in. circular headsaw	16	0.50	0.50	Dimension poplar lumber: 80% Pallets: 20%	Remanufacturing into pallets: 80% Local construction: 10% Retailers: 10%
B AND I LUMBER AND CONSTRUCTION LTD. Box 57 Drayton Valley TOEOMO (403) 542-2087	85	88	Salvage: 100%	Sawmill; 48-in. circular headsaw	40	0.50	0.50	Dimension lumber: 30% Timbers: 70%	Wholesalers: 80% Local construction: 20%
BLAKE, CHARLES Box 268 Whitecourt T0E 2L0 (403) 778-6279	1	30	LTP: 100%	Sawmill; 48-in. circular headsaw	10	0.25	0.25	Dimension lumber: 80% Boards: 20%	Own use: 100%
BOYER, TOM General Delivery Wildwood T0E 2M0 (403) 325-3756	17	157	LTP and CTP: 100%	Portable sawmill; 48-in. circular headsaw	48	0.25	0.25	Dimension lumber: 60% Boards: 20% Timbers for furniture: 20%	Wholesalers and retailers: 50% Local construction: 50%
CHICADEE FOREST PRODUCTS LTD. Box 1466 Whitecourt T0E 2L0 (403) 778-6332	80	0	LTP: 10% Purchase: 90%	Sawmill; 48-in. circular headsaw	30	0.50	0.50	Dimension lumber: 70% Timbers: 20% Boards: 10%	Local construction: 70% Wholesalers: 30%

Continued on next page

Name, address, and telephone	Production 1987–88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
DAVIO, LEON Box 387 Whitecourt T0E 2L0 (403) 778-3540	10	80	LTP: 50% Purchase: 30% Salvage: 20%	Sawmill; 48-in. circular headsaw	10	0.25	0.25	Timbers: 60% Dimension lumber: 30% Furniture planks: 10%	Local construction: 50% Retailers: 50%
FANTIN, LOUIS Box 594 Mayerthorpe T0E 1N0 (403) 786-4768	20	84	LTP: 100%	Sawmill; 46-in. circular headsaw	2	0.25	0.25	Timbers: 60% Dimension lumber: 40%	Wholesalers: 80% Local construction: 20%
FLEMING, ROBERT Box 26 Ft. Assiniboine T0G 1A0 (403) 584-2188	20	699	CTP: 90% Private: 10%	Sawmill; 48-in. circular headsaw	8	0.25	0.25	Dimension lumber: 70% Timbers: 30%	Wholesalers: 90% Local construction: 10%
GRAETZ, KARL Box 360 Wildwood T0E 2M0 (403) 325-2402	5	5	Private: 100%	Sawmill; 48-in. circular headsaw, portable planer	0.5	0.25	0.25	Dimension lumber: 70% Timbers: 20% Corrals: 10%	Local construction: 50% Own use: 50%
HRDLICKA, WILLIAM Peers T0E 1W0 (403) 795-2401	15	10	Salvage: 100%	Sawmill; 46-in. circular headsaw	5	0.25	0.25	Timbers: 40% Dimension lumber: 30% Boards: 20% Barn floors: 10%	Local construction: 70% Own use: 30%
HUTCHISON, IAN Box 64 Wildwood T0E2M0 (403) 325-2425	8	100	Private: 100%	Portable sawmill; 48-in. circular headsaw	80	0.25	0.25	Dimension lumber for furniture: 90% Fencing: 10%	Wholesalers and builders: 90% Local construction: 10%

KUSMIERZ LUMBER Box 191 Wildwood T0E 2M0 (403) 325-2176	60	400	LTP: 50% Purchase: 50%	Sawmill; 38-, 40-, and 42-in. circular headsaw	26	0.50	0.50	Timbers: 70% Dimension lumber: 20% Boards: 10%	Wholesalers and retailers: 100%
McEWAN BROS. CONTRACT Box 49 Whitecourt T0E 2L0 (403) 778-6175	83	0	LTP and CTP: 100%	Sawmill; 48-in. circular headsaw	8	0.75	1.00	Dimension lumber: 70% Boards: 30%	Local construction: 100%
MEROPOULIS, BERT Box 102 Niton Junction T0E 1S0 (403) 795-3920	18	2	Private: 100%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Dimension lumber: 70% Timbers: 20% Boards: 10%	Local construction: 100%
PUESCHEL, KURT Box 43 Whitecourt T0E 2L0 (403) 778-3546	20	40	LTP: 50% Private: 50%	Sawmill; 36-in. circular headsaw, planer	1	0.25	0.25	Dimension lumber: 70% Boards: 30%	Local construction: 100%
SEREDALE FARMS Box 30 Breynat T0H 0C0 (403) 771-2204	2	10	LTP and CTP: 100%	Sawmill; 48-in. circular headsaw	10	0.25	0.25	Dimension lumber: 70% Boards: 30%	Own use: 100%
TETZ, WAYNE Mackay T0E 1L0 (403) 795-2346	10	0	LTP: 100%	Sawmill; 48-in. circular headsaw	1	0.25	0.25	Firewood: 50% Corrals: 50%	Own use: 50% Local construction: 50%

Continued on next page

Name, address, and telephone	Production 1987-88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Woodlands	Mill	Products and services	Marketing agents and markets
VEITCH, KEITH Wildwood T0E2M0 (403) 325-2466	20	30	LTP: 50% Private: 30% Salvage: 20%	Sawmill; 48-in. circular headsaw	40	0.25	0.25	Timbers for trailer blocking: 60% Dimension lumber: 30% Boards: 10%	Local construction: 70% Retailers: 30%
ZERB LUMBER Niton Junction T0E 1S0 (403) 795-2531	50	400	CTP: 60% Salvage: 30% Purchase: 10%	Sawmill; 48-in. circular headsaw	3	0.50	0.50	Dimension lumber: 60% Timber: 30% Boards: 10%	Remanufacturing: 90% Local construction: 10%

APPENDIX 9

DIRECTORY OF SECONDARY POPLAR-USING INDUSTRIES IN ALBERTA, 1987–88

(Producing containers, furniture, pallets, and cattle feed pellets)

Name, address, and telephone	Production 1987–88 (M fbm) Poplar	Softwood	Wood supply	Facilities	Poplar production: Avg. log-haul woods to mill (km)	Employment (person-years) Mill	Office	Products and services	Marketing agents and markets
ALBERTA PALLET CO. LTD. Box 610 Airdrie T0M 0B0 (403) 948-5977	300	57	Purchase: 100%	Pallet, container, and bed-frame mill	300	18.0	2.0	Pallets: 70% Container and bed frames: 30%	Wholesale and retail: 100%
GROVE LUMBER LTD. Box 26240 Spruce Grove T0E 2C0 (403) 962-6266	1000	0	Purchase: 100%	Sawmill and and retail sales	—[a]	0.0	3.0	Dimension lumber: 60% Timbers: 30% Boards: 10%	Retail sales: 100%
HPC CONSTRUCTION LTD. (Northland Children's Furniture) Box 3382 Spruce Grove T7X 3A7 (403) 962-4622	100	—[a]	Purchase: 100%	Children's furniture mill	—[a]	29.0	2.0	Children's furniture: 100%	Canada: 20% USA: 80%
SEA CAN CONTAINERS (1976) LTD. 7349 - 18 Street Edmonton T6P 1P9 (403) 440-4037	3	0	Purchase: 100%	Container mill	—[a]	2.0	1.0	Containers: 100%	Wholesale and retail: 100%

SNOW GOOSE INDUSTRIES LTD. General Delivery Wildwood T0E 2M0 (403) 325-2021	150	—[a]	Purchase: 100%	Furniture mill	100	9.0	3.0	Day care furniture: 40% Computer tables: 40% Shelving: 20%	Direct sales to school and offices: 100%
SOUTHVIEW FIBRETECH LTD. 8441 - 14 Avenue Edmonton T6K 1X3 (403) 454-3471	900 m^3	0	Purchase: 100%	Alfalfa cattle feed pelleting plant	8	8.0	4.0	Aspen cattle feed pellets: 100%	Local sales to farmers: 100%
SUNCHILD FOREST PRODUCTS (1983) Box 68 Winterburn T0E 2N0 (403) 447-3275	20	7	Purchase: 100%	Pallet mill	300	20.0	3.0	Pallets: 80% Boards: 20%	Alberta and Saskatchewan: 10% Other Canada: 70% USA: 20%

[a] Not applicable.