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The 1976-77 Extended Dry Period in Western Canada

by

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Introduction

Very dry weather has persisted since late last summer across southern British Columbia, the agricultural zone of the prairie provinces, and northwestern Ontario. Although the weather system, a blocking ridge over western Canada, which caused the well below normal precipitation has broken down, some regions, specifically the prairie provinces, have continued to receive little or no precipitation.

1. British Columbia

From September 1/76 to February 28/77 most of southern British Columbia received less than 60 percent of its normal precipitation (figure 1, table 1). The lack of precipitation coupled with above normal temperatures in the month of February has resulted in very low snowpacks. Revelstoke received 39.1 cm of snow in February compared to the 1941-70 average 79.2 cm. Besides striking a severe blow to the skiing industry, the lack of precipitation and poor snowpack in southern British Columbia could have a major impact on the region's water supplies for reservoirs.

Most of the precipitation which coastal southern British Columbia receives annually usually falls in the months of November through February (figure 3). If Vancouver received normal amounts of precipitation for the three month period March through May, the accumulated precipitation from September 1/76 to May 31/77 would be only 68 percent of normal.

During the first half of March above normal precipitation fell in extreme southern British Columbia but regions in the vicinity of Revelstoke to

Prince George received below normal precipitation.

2. The Prairie Provinces

The September 1/76 to February 28/77 total precipitation (figure 2) is generally 40 percent or less of the 1941-70 average. A mild dry February virtually depleted the snowpack. As of March 15 snowdepths were reported as zero south of a line through Winnipeg-Yorkton-Saskatoon-Edmonton (table 2). The rest of the agricultural zone has snowdepths less than 5 centimetres. Projected September 1/76 to May 31/77 total precipitation, assuming normal amounts for March through May (table 1), would be only 60 percent of normal, approximately, for Saskatchewan and southern Manitoba.

The present soil moisture deficiencies and poor winter snowpack over the prairie agricultural zone could result in poor germination of spring planted crops particularly in stubble fields. As a result of the low soil moisture there is a very real threat of soil erosion.

Virtually no precipitation was recorded in the agricultural regions of Alberta, southern Saskatchewan and southern Manitoba during the first half of March and amounts of less than 10 millimetres fell in central Saskatchewan during the same period.

3. Northwestern Ontario

Accumulated precipitation from September 1/76 to February 28/77 was less than 40 percent of the 1941-70 average from Thunder Bay to Kenora and southward. The incipient low soil moisture has caused some concern among foresters who anticipate increased forest fire danger this spring and summer. Projected September 1/76 to May 31/77 total precipitation is only 55 to 60 percent of normal in this area by assuming normal precipitation from March through May. Forestry districts to the north of this region appear in good shape moisture wise.

Precipitation was below normal in the Kenora-Red Lake-Pickle Lake region and above normal elsewhere for the first half of March.

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TABLE 1: TOTAL PRECIPITATION (mm)

STATION	Total Sept. 1 through Feb. 28 1976-77 Actual	Normal	Percent of Normal	Normal Total Precip March 1 through May 31	Projected Sept 1 - May 31 Precip. 1976-77 Assuming Normal March - May	Normal Sept 1 - May 31	1976-77 Percent of Normal
BRITISH COLUMBIA							
Blue River	387.4	461.3	84	159.8	547.2	621.1	88
Castlegar	196.8	385.5	51	140.5	337.3	526.0	64
Cranbrook A	60.8	238.1	26	88.0	148.8	326.1	46
Hope A	980.2	1157.7	85	306.6	1286.8	1464.3	88
Kamloops A	87.6	131.8	66	39.6	127.2	171.4	74
Lytton	129.1	349.1	37	62.2	191.3	411.3	47
Penticton A	63.9	146.3	44	67.3	131.2	213.6	61
Revelstoke A	366.3	720.8	51	178.3	544.6	899.1	61
Vancouver Int'l A	445.4	753.9	59	202.2	647.6	956.1	68
ALBERTA							
Banff	152.2	205.3	74	110.3	262.5	315.6	83
Calgary Int'l A	108.5	121.6	89	99.6	208.1	221.2	94
Cold Lake A	83.1	151.7	55	81.5	164.6	233.2	71
Coronation A	57.7	127.1	45	71.9	129.6	199.0	65
Edmonton Int'l A	111.8	142.7	78	74.2	186.0	216.9	86
Edson	131.1	178.1	74	110.0	241.1	288.1	84
Fort McMurray A	116.9	164.6	71	71.6	188.5	236.2	80
Grande Prairie A	135.5	183.9	74	80.5	216.0	264.4	82
Jasper	132.6	184.8	72	72.1	204.7	256.9	80
Lethbridge A	81.7	149.9	55	112.6	194.3	262.5	74
Medicine Hat A	50.2	123.7	41	82.5	132.7	206.2	64
Peace River A	119.3	136.4	87	62.0	181.3	198.4	91
Pincher Creek	126.7	212.5	60	150.2	276.9	362.7	76
Red Deer A	108.0	134.0	81	90.0	198.0	224.0	88
Rocky Mountain House	138.5	162.8	85	116.6	255.1	279.4	91
Vermilion A	79.7	124.1	64	68.9	148.6	193.0	77
Whitecourt	170.6	163.0	105	99.6	270.2	262.6	103
SASKATCHEWAN							
Broadview	55.2	137.9	40	92.7	147.9	230.6	64
Estevan A	53.2	134.4	40	95.3	148.5	229.7	65
Hudson Bay	74.5	157.9	47	88.2	162.7	246.1	66
Kindersley	31.8	100.0	32	56.3	88.1	156.3	56
Moose Jaw A	36.7	126.3	29	84.0	120.7	210.3	57
North Battleford A	56.6	119.2	48	70.8	127.4	190.0	67
Prince Albert A	48.2	135.7	36	78.7	126.9	214.4	59
Regina A	31.0	126.0	25	82.6	113.6	208.6	54
Saskatoon A	53.4	125.5	43	71.4	124.8	196.9	63
Swift Current A	53.1	133.8	40	80.6	133.7	214.4	62
Wynyard	44.4	152.1	29	99.3	143.7	251.4	57
Yorkton A	56.4	156.4	36	88.8	145.2	245.2	59
MANITOBA							
Bissett	139.7	203.9	69	122.2	261.9	326.1	80
Brandon A	59.6	143.2	42	103.1	162.7	246.3	66
Dauphin A	74.7	157.2	48	112.5	187.2	269.7	69
Gimli	95.9	196.4	49	111.8	207.7	308.2	67
Grand Rapids	122.6	184.2	67	90.2	212.8	274.4	78
Norway House A	174.1	160.1	109	113.5	287.6	273.6	105
Pilot Mound	94.6	178.0	53	131.4	226.0	309.4	73
Portage la Prairie A	76.7	182.7	42	137.1	213.8	319.8	67
The Pas A	118.2	172.7	68	83.8	202.0	256.5	79
Winnipeg Int'l A	55.1	181.6	30	120.7	175.8	302.3	58
NORTHWESTERN ONTARIO							
Armstrong A	270.4	329.3	82	143.3	413.7	472.6	88
Atikokan	127.9	382.0	34	172.0	299.9	554.0	54
Kenora A	96.9	244.9	40	133.9	230.8	378.8	61
Pickle Lake	293.2	300.3	98	138.7	431.9	439.0	98
Red Lake	168.7	247.8	68	117.0	285.7	364.8	78
Sioux Lookout A	227.7	314.5	72	148.1	375.8	462.6	81
Thunder Bay A	115.0	318.6	36	174.8	289.8	493.4	59

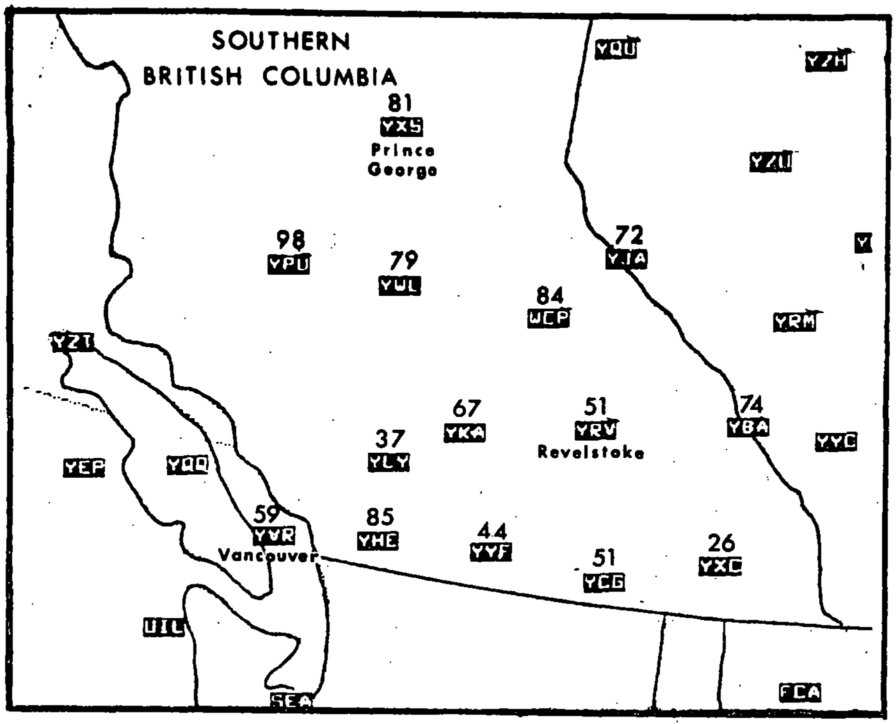


figure 1 PERCENT OF NORMAL PRECIPITATION FOR THE PERIOD SEPT 1/76 TO FEB 28/77

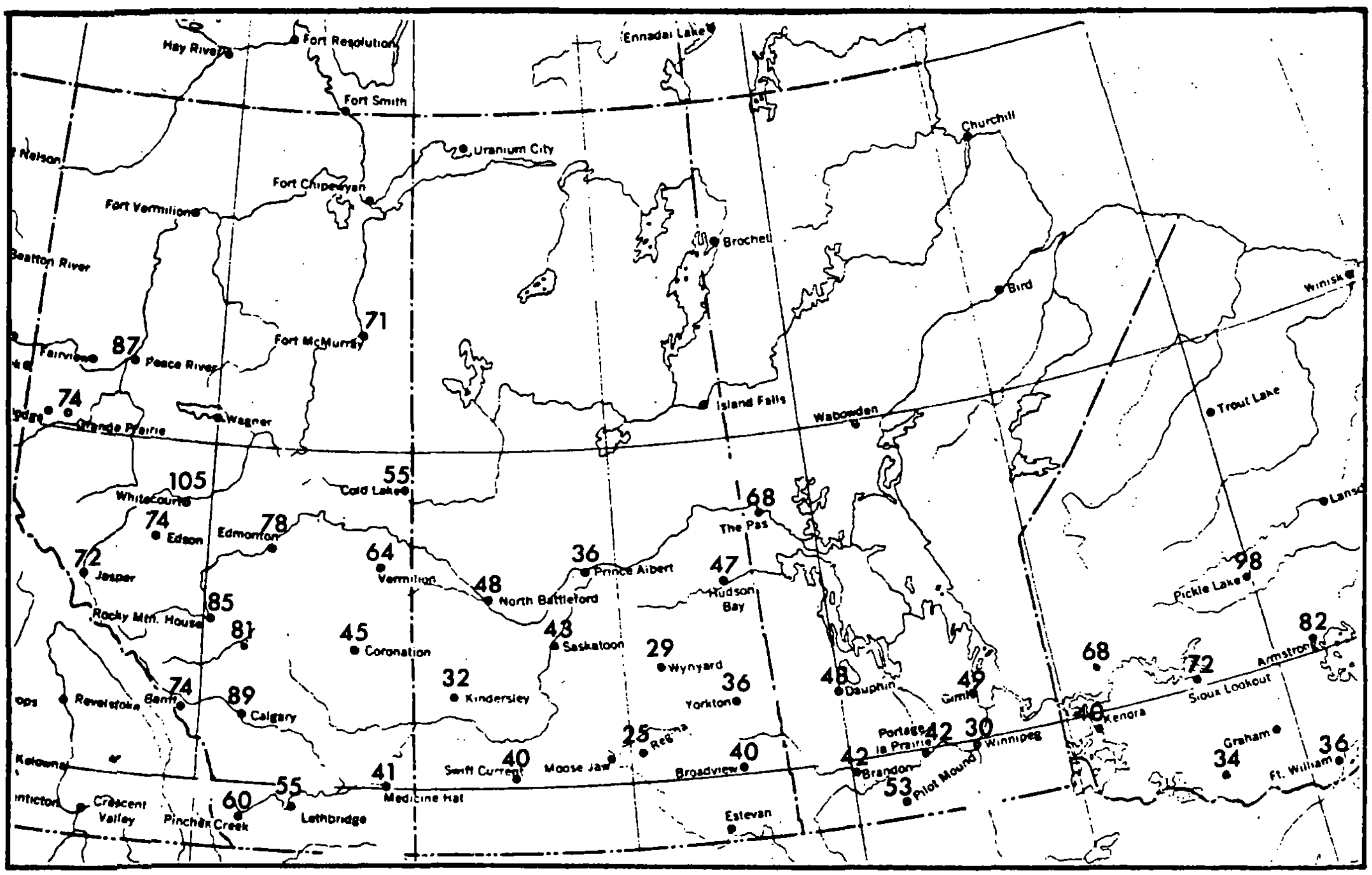


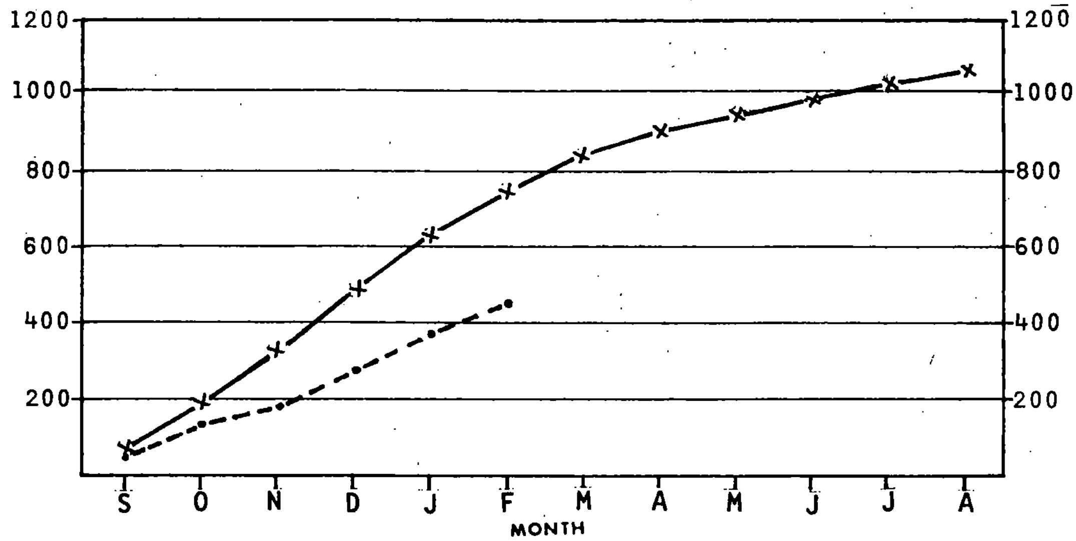
figure 2 PERCENT OF NORMAL PRECIPITATION FOR THE PERIOD SEPT 1/76 TO FEB 28/77.

ACCUMULATED MONTHLY PRECIPITATION IN MILLIMETRES

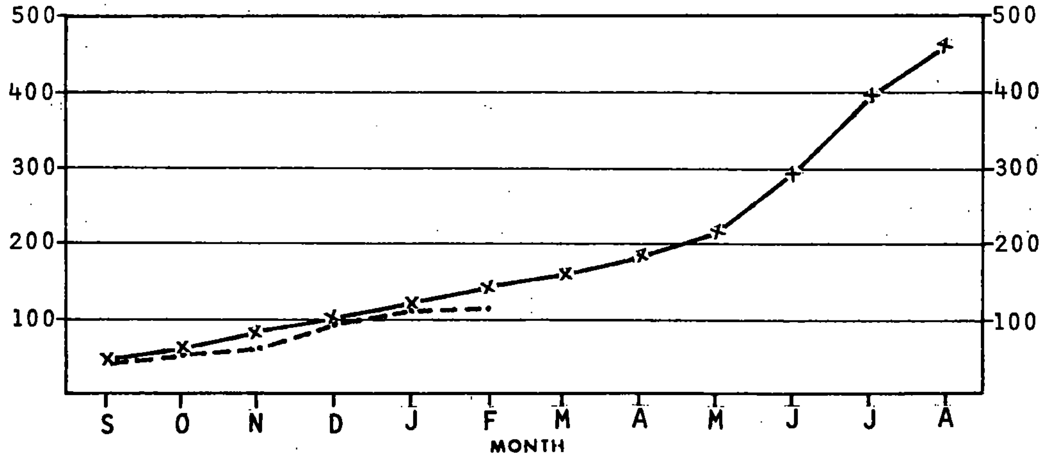
NORMAL 1941-70 (—)

ACTUAL 1976-77 (--)

VANCOUVER INT'L A



EDMONTON INT'L A



KINDERSLEY

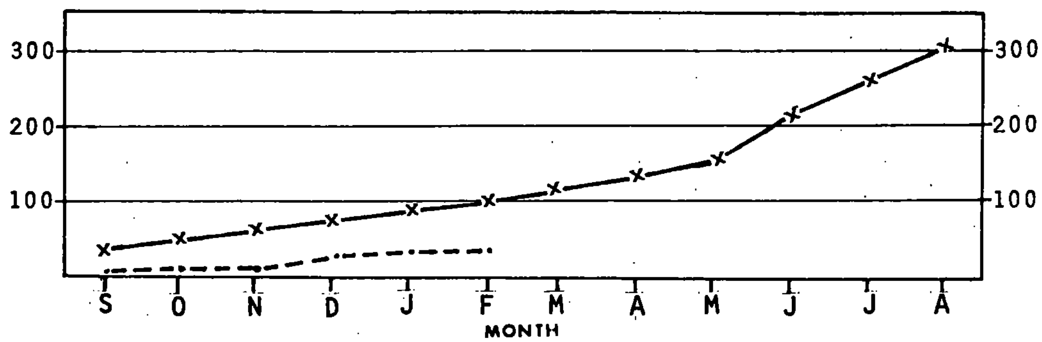
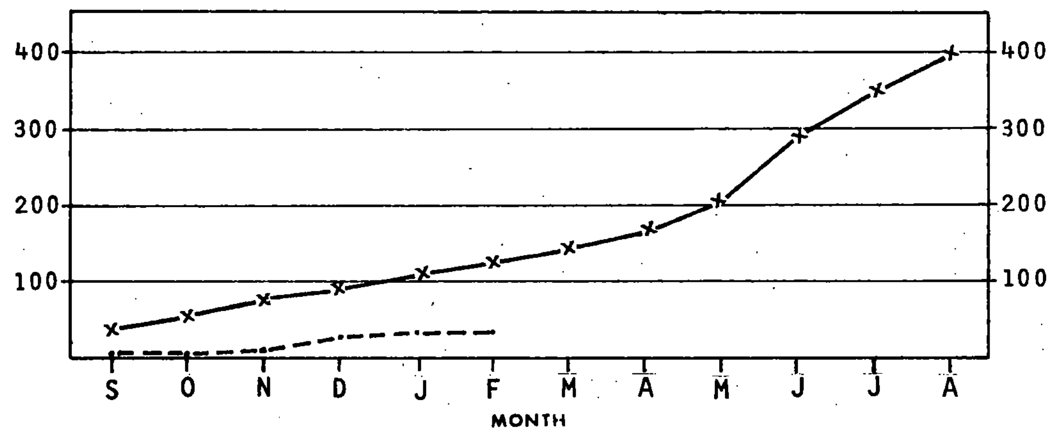


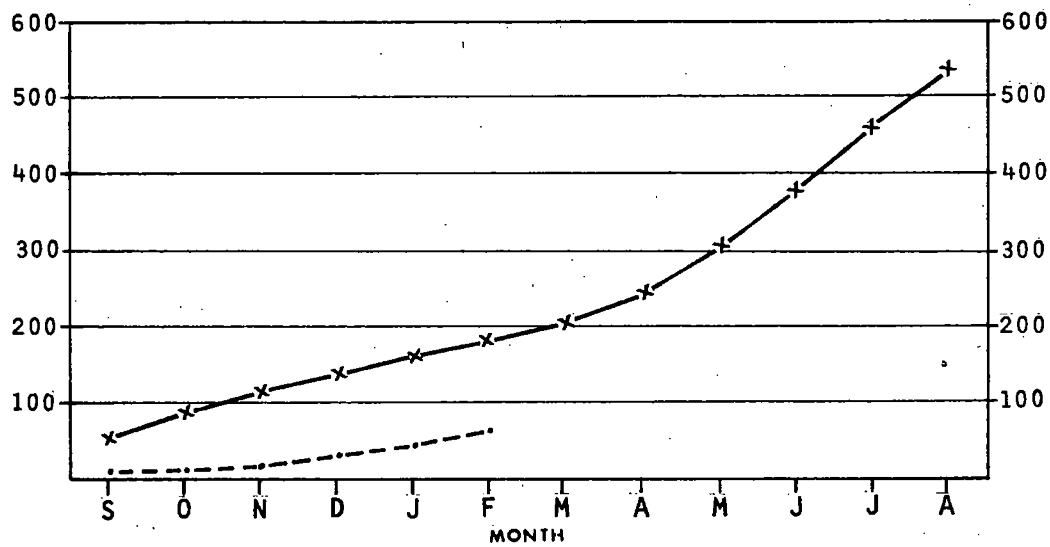
figure 3A

ACCUMULATED MONTHLY PRECIPITATION IN MILLIMETRES
NORMAL 1941-70(—)
ACTUAL 1976-77(--)

REGINA A



WINNIPEG INT'L A



THUNDER BAY A

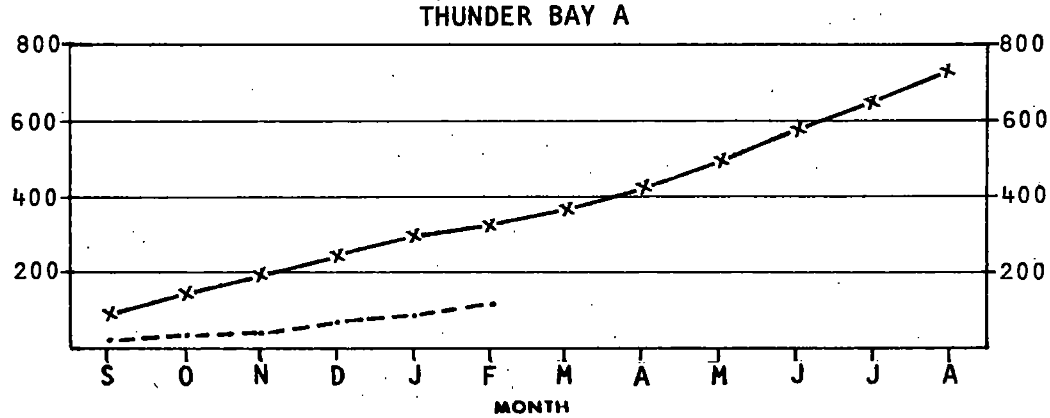


figure 38

Table 2

March 15 Snow Depths (cm)

Station	Period	Mean Depth	Std. Dev.	Max.	Min.	1977 Depth
ALBERTA						
Banff	1956-75	27.1	20.2	69	0	22
Calgary Int'l A	1956-75	4.2	7.4	25	0	0
Cold Lake A	1956-75	28.7	15.9	74	5	3
Coronation	1956-75	22.9	17.9	63	0	0
Edmonton Namao	1956-75	20.8	16.5	76	3	2
Ft. McMurray A	1956-75	35.6	13.7	58	8	24 Mar 14
Grande Prairie A	1956-75	32.4	13.7	71	15	6
Jasper	1956-75	19.4	14.8	61	0	0
Lethbridge A	1956-75	3.9	7.6	25	0	0
Medicine Hat A	1956-75	4.6	7.3	28	0	0
Peace River A	1959-75	39.0	25.1	102	8	15
Red Deer A	1956-75	21.2	15.8	51	0	13
Rocky Mountain House	1956-75	28.2	18.0	69	0	0
Suffield A	1956-75	7.5	9.4	30	0	MISSING
Vermilion A	1956-75	29.6	16.8	74	0	3
Whitecourt	1956-75	39.5	21.5	99	10	28
SASKATCHEWAN						
Estevan	1956-75	11.0	11.7	36	0	0
Hudson Bay	1956-75	47.0	24.4	117	20	4
Kindersley KY	1959-75	18.2	17.3	63	0	0
Moose Jaw A	1956-75	8.5	11.6	36	0	0
N. Battleford A	1956-75	38.2	25.6	94	5	2
Prince Albert A	1956-75	34.4	16.1	84	10	2
Regina A	1956-75	20.2	17.5	69	0	TR
Saskatoon A	1956-75	21.1	16.0	56	3	1
Swift Current A	1956-75	12.8	15.9	53	0	0
Yorkton A	1956-75	45.3	25.3	107	0	3
MANITOBA						
Dauphin A	1956-75	29.6	19.8	86	0	2
Pilot Mound PC	1958-75	22.7	17.1	61	0	0
Portage La Prairie	1956-75	23.0	16.8	74	0	0
The Pas A	1956-75	59.1	25.6	132	20	8
Winnipeg Int'l A	1956-75	26.5	19.2	84	0	TR