

PRAIRIE PROVINCES WATER BOARD

**(as constituted under the terms of the
agreement of 28 July 1948)**

TWENTY-SECOND

ANNUAL REPORT

(1 January 1969 to 30 October 1969)

May, 1970

Regina, Saskatchewan

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J. M. CROOK

James M. Crook has passed away since the last meeting of the Board. Undoubtedly, the passing of this esteemed Member will be duly recorded and his memory honoured at the next meeting of the Board.

MEMBERSHIP OF THE BOARD

The Prairie Provinces Water Board is composed of five members. The three provincial members represent the Provinces of Alberta, Saskatchewan and Manitoba, and the two federal members represent the Department of Regional Economic Expansion, and the Department of Energy, Mines and Resources. The Engineering Secretary to the Board is employed by the Prairie Farm Rehabilitation Administration (Department of Regional Economic Expansion).

During 1969 the following persons served on the Board:

M. J. Fitzgerald	Western Regional Director Department of Regional Economic Expansion Regina, Saskatchewan
R. H. Clark	Special Adviser Inland Waters Branch Department of Energy, Mines and Resources Ottawa, Ontario
R. E. Bailey	Director, Water Resources Division Department of Agriculture Province of Alberta Edmonton, Alberta
J. M. Crook	Chief Engineer Saskatchewan Water Resources Commission Province of Saskatchewan Regina, Saskatchewan
T. E. Weber	Director, Water Control & Conservation Branch Department of Mines and Natural Resources Province of Manitoba Winnipeg, Manitoba
L. K. Szojka	Acting Engineering Secretary to the Board Engineer-in-Charge Hydrology Division, PFRA Department of Regional Economic Expansion Regina, Saskatchewan

Reconstitution of the Board on October 30, 1969 changed the membership of the Board. For historical reasons and for reference, the list of past membership covering the 21-year time period 1948-1968, has been drafted and is included on the following page.

Prairie Provinces Water Board
Membership of the Board from 1948 to 1968

YEAR	FEDERAL		ALBERTA	MANITOBA	SASKATCHEWAN	SECRETARY
	CHAIRMAN	MEMBER				
1948	L. B. THOMSON Director, PFRA Regina, Saskatchewan	H. HARR Acting Controller Dominion Water & Power Bureau Ottawa	B. RUSSELL Director Alberta Water Resources Branch Edmonton, Alberta	D. H. STUBBS Deputy Minister Manitoba Dept. of Mines & Natural Resources Winnipeg, Manitoba	G. W. MUSHO Chief Engineer Sask. Water Rights Branch Regina, Saskatchewan	Acting Secretary - W. H. Berry
1949	"	H. HARR Controller Dominion Water & Power Bureau Ottawa, Ontario	"	"	E. J. SCAMPELL Sask. Conservation & Development Branch Regina, Saskatchewan	Acting Secretary - W. H. Berry
1950	"	H. HARR Chief, Water Resources Division Ottawa, Ontario	B. RUSSELL Director Alta. Dept. of Water Resources Edmonton, Alberta	"	E. J. SCAMPELL Chief Engineer Sask. Water Rights Office Regina, Saskatchewan	Engineering Secretary W. H. Berry
1951	"	"	"	B. B. MCGARTH Director Man. Water Resources Branch Winnipeg, Manitoba	"	"
1952	"	I. R. STONE Chief, Water Resources Division Dept. of Resources & Development Ottawa, Ontario	"	"	"	"
1953	"	H. H. CLARK Chief, Water Develop- ment Projects Section Water Resources Division Dept. of Resources & Development Ottawa, Ontario	"	"	"	"
1954	"	"	F. L. GRINDLEY Director Alta. Dept. of Water Resources Edmonton, Alberta	"	"	"
1955	"	"	"	"	"	"
1956	Dr. L. B. THOMSON - deceased Sept. 1956; no Chairman appointed	R. H. CLARK Chief Hydraulic Engineer Water Resources Branch Dept. of Northern Affairs & National Resources Ottawa, Ontario	"	"	"	"
1957	D. L. MACKENZIE Director, PFRA Regina, Saskatchewan	"	F. L. GRINDLEY Director Alta. Water Resources Branch Edmonton, Alberta	"	"	"
1958	"	"	"	"	B. V. BOYSON Chief Engineer Sask. Water Rights Office Regina, Saskatchewan	Dec. 1958 - E. F. DURRANT
1959	"	"	"	J. A. GRIFFITHS Director Water Control & Con- servation Winnipeg, Manitoba	"	"
1960	"	"	"	"	"	"
1961	"	"	"	"	"	"
1962	G. L. MACFENZIE Special Assistant PFRA Regina, Saskatchewan	"	"	"	B. V. BOYSON Chief Engineer Water Rights Branch Regina, Saskatchewan	"
1963	G. L. MacFenzie (deceased June 1963) N. J. FITZGERALD Director, PFRA Regina, Saskatchewan	"	"	"	B. V. BOYSON Director Water Rights Branch Regina, Saskatchewan	"
1964	"	"	"	"	"	"
1965	"	"	F. L. GRINDLEY Director Dept. of Water Resources Province of Alberta Edmonton, Alberta	J. A. GRIFFITHS Director Water Control & Con- servation Branch Department of Agric. & Conservation Prov. of Manitoba Winnipeg, Manitoba	B. V. BOYSON Director Water Rights Branch Sask. Water Resources Commission Province of Sask. Regina, Saskatchewan	E. F. DURRANT - Eng. Sec. - resigned Apr./65 J.G.S. MCKENZIE (Apr.- Sept. 1965) - Acting Eng. Secretary C. BOY - Eng. Sec. - appointed Sept. 1965
1966	N. J. FITZGERALD Director, PFRA Canada Dept. of Agric. Regina, Saskatchewan	R. H. CLARK Chief, Engineering Division Water Resources Branch Dept. of Energy, Mines & Resources Ottawa, Ontario	R. E. BAILEY Director Dept. of Water Resources Prov. of Alberta Edmonton, Alberta	T. E. WEBER Director Water Control & Con- servation Branch Department of Agric. & Conservation Prov. of Manitoba Winnipeg, Manitoba	"	C. BOY - Eng. Sec. - resigned Sept. 1966 J.G.S. MCKENZIE - Acting Eng. Sec.
1967	"	R. H. CLARK Chief, Engineering Division Inland Waters Branch Dept. of Energy, Mines and Resources Ottawa, Ontario	"	"	from Nov. 1967: J. W. CROSS Chief Engineer Sask. Water Resources Commission Province of Sask. Regina, Saskatchewan	"
1968	"	R. H. CLARK Special Adviser Inland Waters Branch Dept. of Energy, Mines and Resources Ottawa, Ontario	"	T. E. WEBER Director Water Control & Con- servation Branch Dept. of Mines & Natural Resources Prov. of Manitoba Winnipeg, Manitoba	"	L. F. SHUKLA - Acting Eng. Secretary

WARRANT AND FUNCTION OF THE BOARD

The Prairie Provinces Water Board was established on 28 July 1948 by agreement between the Governments of Canada, Manitoba, Saskatchewan and Alberta. A copy of that agreement is attached to the Sixteenth Annual Report as Appendix I.

The Board's function, as expressed in that agreement, is "to recommend the best use to be made of interprovincial waters in relation to associated resources in Manitoba, Saskatchewan and Alberta and to recommend the allocation of water as between each such province of streams flowing from one province into another province."

The duties of the Board are set out in detail in the agreement. Briefly they are:

- (a) to collate and analyze existing data;
- (b) to determine what other data are required from time to time;
- (c) to recommend the allocation of water of any interprovincial stream; and
- (d) to report on any questions relating to projects for the utilization or control of common river or lake systems.

REVIEW OF ACTIVITIES IN 1969

AMENDMENT TO 1948 AGREEMENT

With the signing of the Apportionment Agreement on 30 October 1969, between the governments of Canada and the Prairie Provinces, the Agreement of 28 July 1948 became amended. This 22nd Annual Report is thus concerned with the activities of the Board, as originally constituted, from 1 January 1969 to 30 October 1969.

MEETINGS IN 1969

The Board held three meetings in 1969; on 21 January, 14 July and 15 October. The three meetings were held in Regina.

APPORTIONMENT

Discussions continued in 1969 between officials of the Prairie Provinces and Canada on the question of apportionment of interprovincial waters. The negotiations between Saskatchewan and Manitoba, and the negotiations between Alberta and Saskatchewan having been concluded, led to the drawing up of two interprovincial agreements and a Master Agreement between Canada and the Governments of Alberta, Saskatchewan and Manitoba. These agreements were signed on 30 October 1969.

The Master Agreement brought the interprovincial agreements into force and effect and amended the agreement of 28 July 1948 whereby

the Prairie Provinces Water Board was originally constituted. By virtue of this amendment, the Prairie Provinces Water Board was reconstituted and charged with the administration of the Master Agreement.

DATA NETWORK PLANNING

Prior to 30 October, the Committee met on one occasion in 1969, on 24 September, in Regina. During the previous months, there was an exchange of correspondence on the proposed hydrometric network study, put forward by the Water Survey of Canada, and also on the terms of reference for the consulting engineers who would be engaged.

In reporting to the Chairman of the Board by a letter of 25th September 1969, the Chairman of the Committee expressed its concern that the Water Survey of Canada study would provide for only minimal consideration of meteorological network requirements and streamflow forecasting needs. The Committee was also requesting a better definition of their terms of reference in regard to the study and sought further direction from the Board in this regard.

These and other related matters were considered by the Board at the meeting of 15 October. After some discussion, it was agreed that the Chairman should write to the Director of the Inland Waters Branch expressing the regret of the Board that the proposed study did not fully meet the needs for planning a hydrometeorological network; that time limitations would curtail the cooperation and participation of the provinces, and that instead of the consultants meeting with the provinces individually, they should meet with the Data Network

Planning Committee. It was also agreed that the Data Network Planning Committee in turn should meet with the consultants and provide the necessary technical guidance and advice that the study required and that it would be possible to provide within the existing physical and time limitations.

SASKATCHEWAN RIVER AT THE PAS

A study into the effect of Lake Diefenbaker on flood peak flow reduction at The Pas reached the draft stage in July. Subsidiary investigations are completed. The report will be available by July 1970.

OTHER REPORTS AND STUDIES

1. The "Compilation of Runoff Records for the Canadian Prairies" was updated to 1967.
2. The "Index to the Prairie Provinces Water Board Minutes" was updated to 1969.
3. In support of the updating of Prairie Provinces Water Board Report No. 5 - Supplement B, a computer programme was developed which prints out tables of evaporation, precipitation and net evaporation for the 15 key stations on the prairies. This information was also forwarded to the Saskatchewan-Nelson Basin Board upon their request.
4. An estimate of streamflow depletions for the Saskatchewan River

System is kept current by the Engineering Secretariat. A chart on the following page provides a graphical comparison between these depletions and the recorded flows at Saskatoon and The Pas.

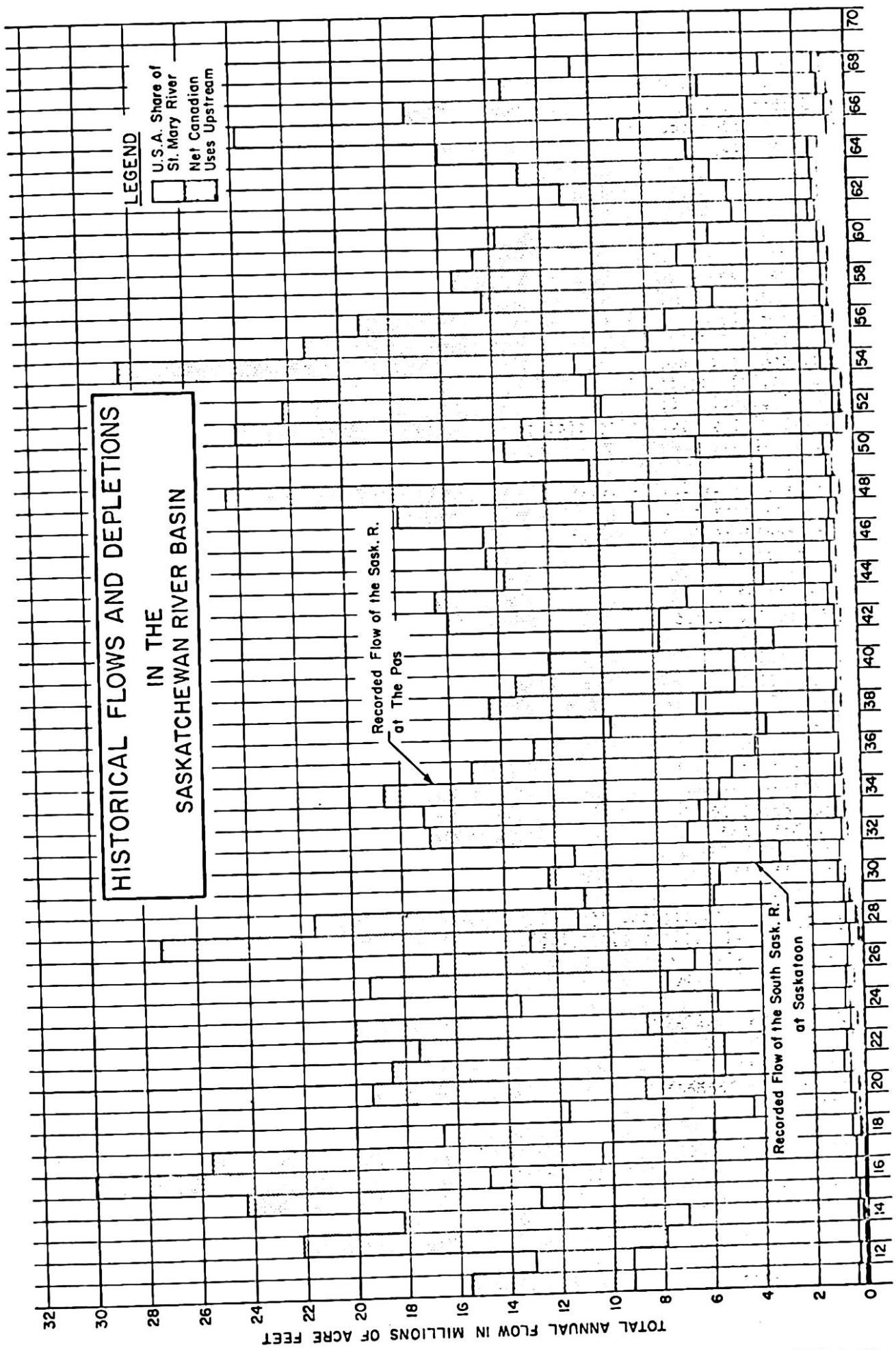
5. A tabulation of "Acreage Actually Irrigated in the Alberta portion of the South Saskatchewan Basin" has been prepared and may be found immediately following the flows and depletions graph. The tabulation is based primarily on material supplied by the Alberta Water Resources Office.



M. J. Fitzgerald
Chairman



L. K. Szojka
Acting Engineering Secretary



HYD-A-412

ACREAGE ACTUALLY IRRIGATED IN ALBERTA 1911 - 1972

YEAR	ST. MARY	WESTERN I.D.	EASTERN I.D.	BOW RIV. DEVELOP.	L. N. I.D.	U.I.D.	M. V. I.D.	L.I.D.	A.I.D.	MACLEOD I.D.	ROSS CR. I.D.	TOTAL
1911	47,000	500										47,500
12	76,200	500										76,700
13	76,200	2,600										78,800
14	76,200	8,448	7,806									92,454
15	76,200	512	7,800									84,512
16	71,281	859	1,497									73,637
17	91,780	3,657	9,005									104,442
18	102,900	25,191	24,140									152,531
19	112,569	31,908	43,660									187,937
1920	62,893	4,083	60,762	4,240								131,978
21	85,902	33,619	88,299	9,400								217,220
22	88,680	49,752	93,375	9,509								241,316
23	75,968	3,074	42,928	11,249	6,963							140,182
24	84,751	24,297	84,200	9,720	29,991	5,264						238,223
25	94,582	5,384	72,994	13,252	43,628	10,000						239,840
26	92,782	19,561	74,401	13,467	56,395	10,026						266,632
27	22,176	1,273	7,921	810	10,012	41						42,233
28	31,924	3,892	45,677	19,361	33,436	2,576						136,866
29	46,441	37,395	78,610	29,260	61,231	3,102						256,039
1930	98,483	41,570	89,913	27,102	70,007	5,847						332,922
31	100,403	47,593	90,724	29,803	70,408	12,983	300					352,214
32	99,789	8,680	90,651	26,379	41,842	11,500	800					279,640
33	104,654	40,812	96,019	21,917	62,416	10,500	1,168					337,686
34	105,490	31,131	101,566	22,208	54,200	10,000	1,950					326,545
35	93,471	19,109	143,997	22,694	73,022	12,000	3,000					367,293
36	111,397	44,614	111,781	26,660	62,790	18,000	2,900					378,142
37	113,546	50,866	124,645	30,107	70,020	17,500	3,500					410,184
38	112,629	35,755	133,928	33,326	73,297	10,000	3,500					402,435
39	110,677	11,647	141,688	34,984	56,712	10,000	3,200					368,908
1940	115,030	20,134	138,462	37,906	76,492	10,500	3,000					401,524
41	109,148	21,144	156,501	35,312	63,575	11,000	3,300					399,980
42	103,183	9,194	166,453	32,946	31,102	12,000	3,400					358,278
43	112,142	7,666	168,496	35,143	67,777	14,000	3,254					408,178
44	112,550	20,000	167,094	37,266	75,927	13,000	3,400	526				429,763
45	112,484	20,000	167,100	38,838	57,126	13,000	3,300	1,000				412,848
46	112,734	19,000	166,326	42,457	64,894	7,453	3,300	1,300				417,464
47	110,848	20,000	168,580	43,594	57,434	7,453	3,300	1,300				412,509
48	109,571	12,000	172,200	44,160	55,374	2,970	3,700	1,500				401,475
49	107,150	26,197	180,000	44,050	72,807	21,000	3,300	1,500				456,004
1950	111,513	23,079	180,000	36,508	78,721	9,758	3,500	2,500				445,579
51	104,571	1,000 ⁽¹⁾	153,804 ⁽¹⁾	24,283	21,979	1,869	(100)	200		0	0	307,806
52	117,261	700 ⁽¹⁾	149,283 ⁽¹⁾	40,416	35,314	6,072	3,350	940		1,600	850	355,792
53	112,779	500 ⁽¹⁾	114,776 ⁽¹⁾	(40,000)	37,409	8,894	3,380	980		1,800	1,100	321,618
54	152,489	1,900 ⁽¹⁾	156,884 ⁽¹⁾	(40,000)	58,745	10,033	3,392	254		2,600	2,100	428,397
55	123,679	2,500 ⁽¹⁾	148,892 ⁽¹⁾	(40,000)	31,753	10,115	3,132	423			1,500	361,994
56	142,156 ⁽²⁾	6,000 ⁽¹⁾	150,976 ⁽¹⁾	109,400 ⁽¹⁾	31,588 ⁽²⁾	11,082 ⁽²⁾	2,773 ⁽²⁾	852 ⁽²⁾	0 ⁽²⁾	0	1,800 ⁽²⁾	496,627
57	161,293 ⁽²⁾	4,500 ⁽¹⁾	189,928 ⁽²⁾	65,000 ⁽²⁾	51,803 ⁽²⁾	15,886 ⁽²⁾	2,773 ⁽²⁾	2,773 ⁽²⁾	0 ⁽²⁾	0	1,685 ⁽²⁾	495,652
58	168,793 ⁽²⁾	9,870 ⁽²⁾	189,845 ⁽²⁾	60,153 ⁽²⁾	51,911 ⁽²⁾	11,032 ⁽²⁾	2,759 ⁽²⁾	1,542 ⁽²⁾	0 ⁽²⁾	0	(1,500) ⁽²⁾	497,443
59	241,030 ⁽²⁾	9,330 ⁽²⁾	163,993 ⁽²⁾	54,514 ⁽²⁾	46,459 ⁽²⁾	17,761 ⁽²⁾	2,789 ⁽²⁾	1,542 ⁽²⁾	360 ⁽²⁾		(1,400) ⁽²⁾	539,238
1960	179,477 ⁽²⁾	12,000 ⁽¹⁾	167,597 ⁽¹⁾	71,392 ⁽¹⁾	71,005 ⁽²⁾	16,536 ⁽²⁾	2,789 ⁽²⁾	1,542 ⁽²⁾	440 ⁽²⁾	0	405 ⁽²⁾	523,184
61	208,547 ⁽²⁾	23,200 ⁽¹⁾	170,413 ⁽¹⁾	78,260 ⁽¹⁾	73,637 ⁽²⁾	23,095 ⁽²⁾	2,760 ⁽²⁾	1,542 ⁽²⁾	1,800 ⁽²⁾	0	200 ⁽²⁾	583,454
62	217,029 ⁽²⁾	30,000 ⁽¹⁾	176,695 ⁽¹⁾	83,910 ⁽¹⁾	73,317 ⁽²⁾	28,465 ⁽²⁾	2,760 ⁽²⁾	4,187 ⁽²⁾	2,176 ⁽²⁾	0	200 ⁽²⁾	618,741
63	229,653 ⁽²⁾	25,000 ⁽¹⁾	170,776 ⁽¹⁾	78,695 ⁽¹⁾	64,510 ⁽²⁾	27,011 ⁽²⁾	2,789 ⁽²⁾	4,511 ⁽²⁾	2,315 ⁽²⁾	0	200 ⁽²⁾	605,460
64	235,015 ⁽²⁾	24,000 ⁽¹⁾	166,726 ⁽¹⁾	86,192 ⁽¹⁾	70,573 ⁽²⁾	19,371 ⁽²⁾	2,789 ⁽²⁾	4,511 ⁽²⁾	2,523 ⁽²⁾	0	200 ⁽²⁾	611,907
65	209,005 ⁽²⁾	2,750 ⁽¹⁾	143,512 ⁽¹⁾	44,526 ⁽¹⁾	22,778 ⁽²⁾	9,805 ⁽²⁾	2,789 ⁽²⁾	4,511 ⁽²⁾	2,523 ⁽²⁾	0	1,500 ⁽²⁾	443,699
66	210,904 ⁽²⁾	3,100 ⁽¹⁾	144,186 ⁽¹⁾	41,536 ⁽¹⁾	19,196 ⁽²⁾	12,725 ⁽²⁾	2,789 ⁽²⁾	4,523 ⁽²⁾	2,523 ⁽²⁾	0	1,050 ⁽²⁾	442,532
67	220,235 ⁽²⁾	12,870 ⁽¹⁾	168,870 ⁽¹⁾	71,935 ⁽¹⁾	47,962 ⁽²⁾	11,866 ⁽²⁾	2,789 ⁽²⁾	4,523 ⁽²⁾	2,523 ⁽²⁾	0	1,250 ⁽²⁾	544,823
68	219,356	10,000	193,352	82,876	56,933	10,109	2,789	4,523	2,523	0	900	588,421
69												
1970												
71												
72												

NOTE Acreage figures from early Irrigation Company annual reports, except as noted below

(1) From "Report on Return Flows from Irrigation Districts in Alberta, 1951 to 1965" by Water Resources Branch, Department of Northern Affairs and National Resources, Calgary.

(2) Information by letter from Alberta Water Resources Office, Edmonton.

E No records - estimated -

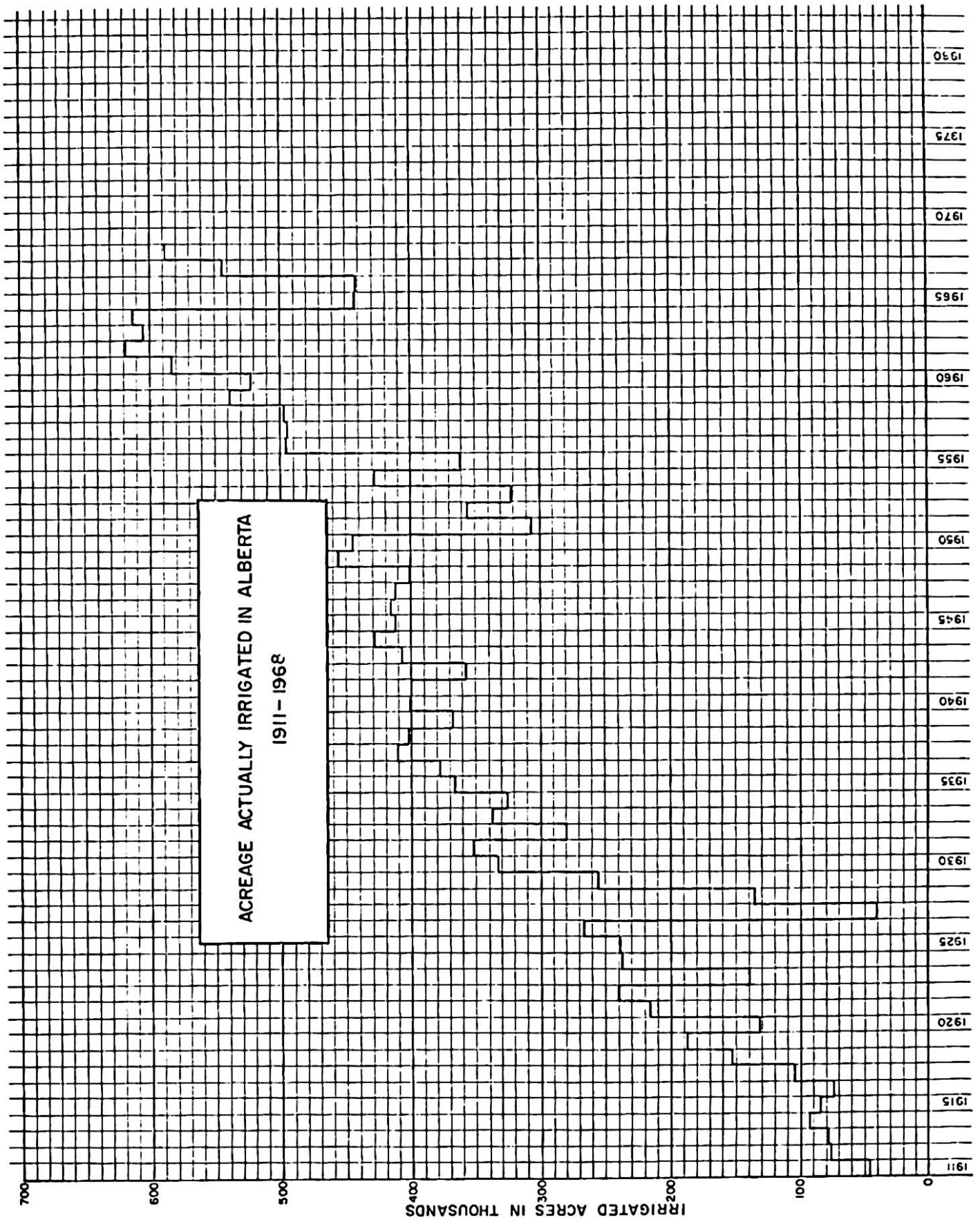


TABLE 1

<u>SUMMARY OF FINAL ALLOCATIONS</u>						
<u>IN THE SASKATCHEWAN RIVER BASIN</u>						
Project	Province	Irrigable Acreage acres	Allocation ac. ft.	Recommended by Water Board	Recommendation approved by O.I.C. from all Governments	
St. Mary-Milk River Proj.	Alta.	465,000	796,000	6-5-49	4-7-51	
Western Irrig. District	"	50,000	85,700	"	"	
Eastern Irrig. District	"	281,000	562,000	"	"	
Bow River Irrig. District	"	240,000	478,534	"	"	
United Irrig. District	"	34,000	51,000	"	"	
Leth. Northern Irr. Dist.	"	96,135	150,000	"	"	
Mountain View Irrig. Dist.	"	3,600	6,000	"	"	
Leavitt Irrig. District	"	4,400	7,000	"	"	
Aetna Irrig. District	"	7,300	13,000	"	"	
MacLeod Irrig. District	"	5,000	8,000	"	"	
Private Projects	"	70,000	80,000	"	"	
Saskatoon - Municipal	Sask.		11,426	18-12-50	8-8-51	
- Steam Plant	"		31,260	"	"	
Caron - Moose Jaw Div.	"		12,600	"	"	
Swift Current Irr. Proj.	"	21,000	55,000	"	"	
<u>Small Projects</u>						
- Main Stem			1,500	"	"	
- Swift Current Basin			5,600	"	"	
- Other Tributaries			4,500	"	"	
<u>SUMMARY OF TENTATIVE ALLOCATIONS</u>						
<u>IN THE SASKATCHEWAN RIVER BASIN</u>						
Regina - Moose Jaw Div.	Sask.		29,000	18-12-50	8-8-51	
French Flats - Valley Park	"	6,502	11,140	"	"	
South Sask. River Project	"	470,000	960,000	15- 5-53	-53	

TABLE 1 (Cont'd)

<u>SUMMARY OF RESERVATIONS IN GOOD STANDING</u>						
<u>IN THE SASKATCHEWAN RIVER BASIN</u>						
Project	Province	Irrigable Acreage acres	Allocation ac. ft.	Recommended by Water Board	Recommendation approved by O.I.C. from all Governments	
Red Deer (Wm. Pearce)	Alta.	250,000	700,000	18-12-58	(Original Reservation)	EXPIRED Dec. 1960
				1-12-60	(Renewed)	EXPIRED Dec. 1962
				16-1-63	(Renewed)	EXPIRED Dec. 1964
				10-11-64	(Renewed)	EXPIRED Dec. 1966
				18-5-67	(Renewed)	EXPIRES* Dec. 1968
Small Projects	Alta. & Sask.		1,000,000	2-12-59	(Original Reservation)	EXPIRED Dec. 1960
				1-12-60	(Renewed)	EXPIRED Dec. 1961
				6-12-61	(Renewed)	EXPIRED Dec. 1962
				16-1-63	(Renewed)	EXPIRED Dec. 1963
				6-11-63	(Renewed)	EXPIRED Dec. 1964
				21-9-65	(Renewed)	EXPIRED Dec. 1966
				18-5-67	(Renewed)	EXPIRES* Dec. 1968

* "or until apportionment of the stream is accomplished" - see PPWB Minute 36-05.

TABLE 1 (Cont'd)

SUMMARY OF RESERVATIONS IN GOOD STANDING IN THE SASKATCHEWAN RIVER BASIN						
Project	Province	Irrigable Acreage acres	Allocation ac. ft.	Recommended by Water Board	Recommendation approved by O.I.C. from all Governments	
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				1-12-60	(Renewed)	EXPIRED Dec. 1962
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				18-5-67	(Renewed)	EXPIRES* Dec. 1968
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				6-12-61	(Renewed)	EXPIRED Dec. 1962
				16-1-63	(Renewed)	EXPIRED Dec. 1963
				6-11-63	(Renewed)	EXPIRED Dec. 1964
				21-9-65	(Renewed)	EXPIRED Dec. 1966
				18-5-67	(Renewed)	EXPIRES* Dec. 1968

* "or until apportionment of the stream is accomplished" - see PPWB Minute 36-05.