

PRAIRIE PROVINCES WATER BOARD

TWENTY-FIRST  
ANNUAL REPORT  
FOR THE CALENDAR YEAR 1968

July, 1969

Regina, Saskatchewan

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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 Agriculture, and the Department of Energy, Mines and Resources. The Engineering Secretary to the Board is employed by the Prairie Farm Rehabilitation Administration (Canada Department of Agriculture).

During 1968 the following persons served on the Board:

M. J. Fitzgerald (Chairman)	Director, PFRA Canada Department of Agriculture Regina, Saskatchewan
R. H. Clark	Special Adviser Inland Waters Branch Department of Energy, Mines and Resources Ottawa, Ontario
R. E. Bailey	Director, Department of Water Resources 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 Canada Department of Agriculture Regina, Saskatchewan

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 1968

### MEETINGS IN 1968

The Board held three meetings in 1968, on the 1st May, 30th October and 12th December. The three meetings were held in Regina.

### APPORTIONMENT

Discussions continued in 1968 between officials of the Prairie Provinces and Canada concerning the proposed agreement on apportionment of interprovincial waters. Negotiations between Alberta and Saskatchewan culminated in approval in principle being given, in January, to a proposed agreement between the two provinces. It is anticipated that negotiations for a similar agreement between Saskatchewan and Manitoba will be satisfactorily concluded early next year.

The Board has been kept informed at all stages of the negotiations and, having regard to its function to recommend allocations of water, various matters relating to the proposed agreements have been discussed at meetings of the Board.

### DATA NETWORK PLANNING

The Data Network Planning Committee submitted its second Progress Report to the Board at the meeting of 1st May in Regina. The report reviewed recent developments in the forecasting activities of the Prairie Provinces and contained maps showing the locations of existing and proposed hydrometric and meteorological stations.

The Committee reported that, due to lack of appropriate supporting staff, it was unable to fulfill the terms of reference assigned to it by the Board. Recommendations were put forward however concerning alternative plans for achieving the assigned objectives. In the light of these recommendations, the Board at its May meeting agreed that the Inland Waters Branch should be asked to take on the planning and design of the hydrometric network with the support and consolidation of the meteorological service and all pertinent provincial agencies. It was also agreed that the Committee would form the point of contact of the provincial members cooperating in this task.

The Department of Energy, Mines and Resources agreed to study the establishment of the network. In this connection, the Board emphasized its view that consideration be given to the establishing of a meteorological network as well as a hydrometric network. Accordingly, and in response to a request from the Department of Energy, Mines and Resources for consolidation of this matter, representatives of the Water Survey of Canada and of the Meteorological Branch met with the Board in December to discuss the hydrometeorological network. Based upon the discussions at this meeting, the Board endorsed the principle of a study by the Department of Energy, Mines and Resources to plan and design a hydrometric data network in close cooperation with the Department of Transport and with the cooperation of the pertinent provincial agencies for the Prairie Provinces.

#### PRAIRIE SURFACE WATER DATA

The Committee met on one occasion in 1968, on 10 September,

at Calgary. Progress in the extension of the hydrometric network was noted and proposals advanced for future programmes of extension.

#### DISTRIBUTION OF REPORTS

The matter of the distribution and classification of the Board reports is still under review. Concerning the report of Dr. Laycock, the Queen's Printer is unable to reproduce it as a saleable item.

#### SASKATCHEWAN RIVER AT THE PAS

The Secretariat is conducting a study into the effect of Lake Diefenbaker on flood potential at The Pas.

#### BOARD MEMBERSHIP

Mr. T. E. Weber, Director, Water Control and Conservation Branch, was officially appointed as Member for Manitoba with effect from 1 January, 1968.

#### APPOINTMENT OF ACTING SECRETARY

At the May meeting of the Board, Mr. L. K. Szojka, Engineer-in-Charge of PFRA Hydrology Division, was appointed Acting Engineering Secretary.

#### OTHER REPORTS AND STUDIES

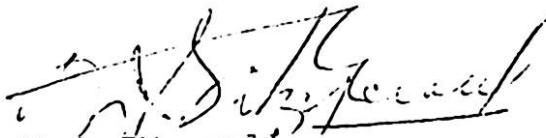
1. At the October meeting of the Board, the Secretariat was requested to update PPWB Report No. 5 entitled "Evaporation from Lakes

and Reservoirs on the Canadian Prairies." This assignment was completed in November and presented as "PPWB Report No. 5 - Supplement B."

2. Also at the October meeting, the Secretariat was requested to update PPWB Report No. 1A entitled "Summary Report of Natural Yearly Flows at Certain Points on the Saskatchewan River System, by Calendar Year, for the Period 1912-1963 Inclusive." This assignment was completed in December and presented as "PPWB Report No. 1A - Addendum."

3. 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.

4. 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 graphs. The tabulation is based primarily on material supplied by the Alberta Water Resources Branch.

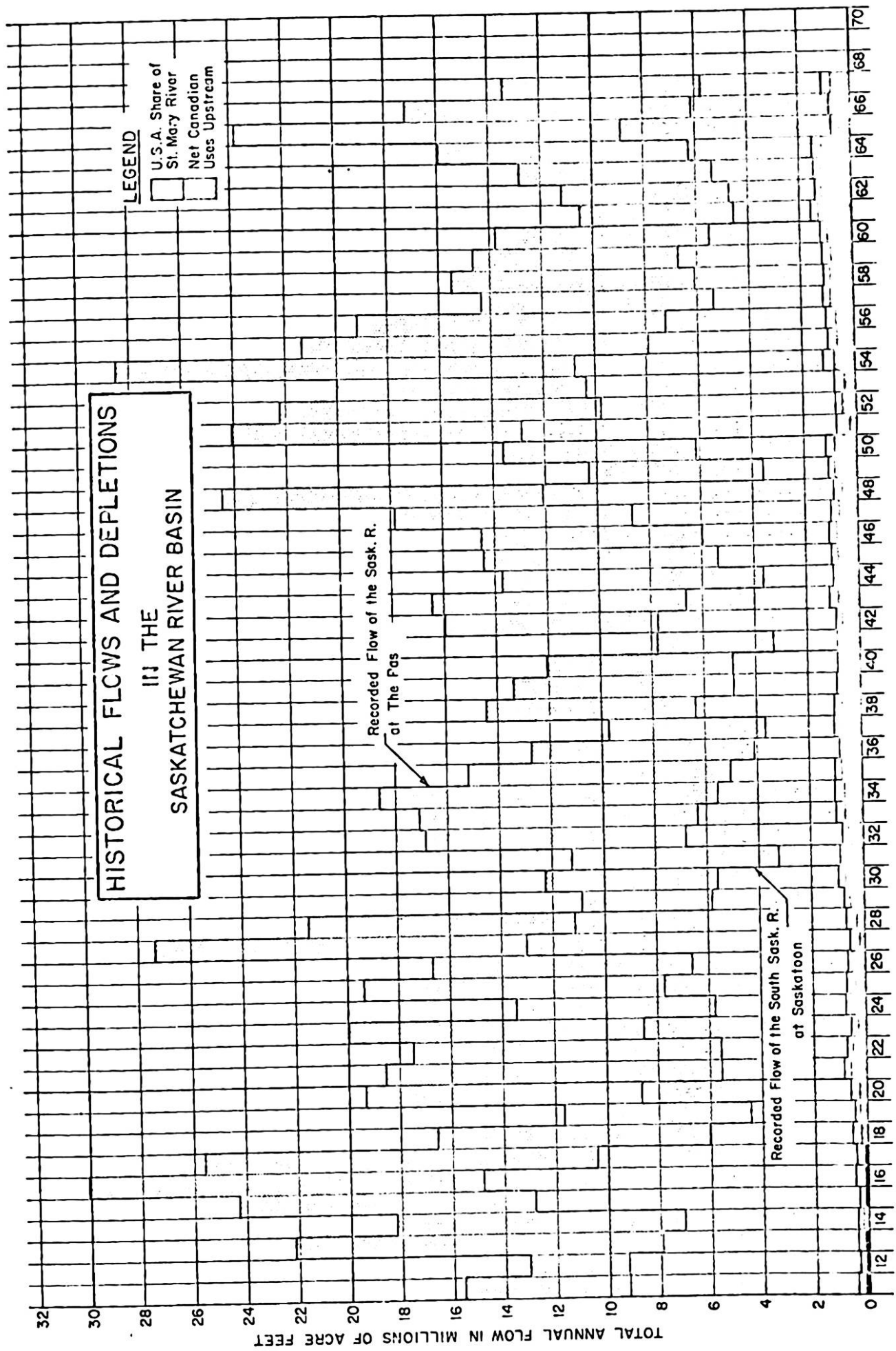
  
M. J. Fitzgerald  
Chairman

  
L. K. Szojka  
Acting Engineering Secretary



**HISTORICAL FLOWS AND DEPLETIONS  
IN THE  
SASKATCHEWAN RIVER BASIN**

**LEGEND**  
 U.S.A. Share of St. Mary River  
 Net Canadian Uses Upstream



## 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	24,440									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	47,533	90,724	29,803	70,408	12,993	300					352,214
32	99,788	8,680	90,651	26,379	41,842	11,500	800					279,640
33	104,854	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	168,495	35,143	67,777	14,000	3,254					408,478
44	112,550	20,000	167,094	37,266	75,927	13,000	3,400					429,763
45	112,404	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	36,503	78,721	9,750	3,500	2,500				445,579
51	104,571	1,000 <sup>(1)</sup>	153,804 <sup>(1)</sup>	24,283	21,979	1,869	(100)	200		0	0	307,806
52	117,261	700 <sup>(1)</sup>	149,289 <sup>(1)</sup>	40,416 <sup>(1)</sup>	35,314	6,072	3,350	940		1,600	850	355,792
53	112,779	500 <sup>(1)</sup>	114,776 <sup>(1)</sup>	(40,000) <sup>(1)</sup>	37,409	8,894	3,380	980		1,800	1,100	321,618
54	152,489	1,900 <sup>(1)</sup>	156,884 <sup>(1)</sup>	(40,000) <sup>(1)</sup>	58,745	10,033	3,392	254		2,600	2,100	420,397
55	123,679	2,500 <sup>(1)</sup>	148,812 <sup>(1)</sup>	(40,000) <sup>(1)</sup>	31,753	10,115	3,132	423			1,500	361,594
56	142,156 <sup>(2)</sup>	6,000 <sup>(1)</sup>	190,976 <sup>(1)</sup>	109,400 <sup>(1)</sup>	31,588 <sup>(2)</sup>	11,082 <sup>(2)</sup>	2,773 <sup>(2)</sup>	852 <sup>(2)</sup>		0 <sup>(2)</sup>	1,800 <sup>(2)</sup>	496,627
57	161,252 <sup>(2)</sup>	4,500 <sup>(1)</sup>	189,928 <sup>(1)</sup>	65,000 <sup>(1)</sup>	51,800 <sup>(2)</sup>	15,866 <sup>(2)</sup>	2,773 <sup>(2)</sup>	2,779 <sup>(2)</sup>	0 <sup>(2)</sup>	0 <sup>(2)</sup>	1,665 <sup>(2)</sup>	495,652
58	168,797 <sup>(2)</sup>	9,870 <sup>(1)</sup>	189,845 <sup>(1)</sup>	60,165 <sup>(1)</sup>	51,916 <sup>(2)</sup>	11,032 <sup>(2)</sup>	2,759 <sup>(2)</sup>	1,542 <sup>(2)</sup>	0 <sup>(2)</sup>	0 <sup>(2)</sup>	(1,500) <sup>(2)</sup>	497,443
59	241,000 <sup>(2)</sup>	9,330 <sup>(1)</sup>	163,993 <sup>(1)</sup>	54,514 <sup>(1)</sup>	46,459 <sup>(2)</sup>	17,76 <sup>(2)</sup>	2,789 <sup>(2)</sup>	1,542 <sup>(2)</sup>	360 <sup>(2)</sup>	0 <sup>(2)</sup>	(1,400) <sup>(2)</sup>	539,238
1960	179,477 <sup>(2)</sup>	12,000 <sup>(1)</sup>	167,597 <sup>(1)</sup>	71,392 <sup>(1)</sup>	71,005 <sup>(2)</sup>	16,536 <sup>(2)</sup>	2,789 <sup>(2)</sup>	1,542 <sup>(2)</sup>	440 <sup>(2)</sup>	0 <sup>(2)</sup>	405 <sup>(2)</sup>	523,184
61	208,547 <sup>(2)</sup>	23,200 <sup>(1)</sup>	170,413 <sup>(1)</sup>	78,260 <sup>(1)</sup>	73,637 <sup>(2)</sup>	23,095 <sup>(2)</sup>	2,760 <sup>(2)</sup>	1,542 <sup>(2)</sup>	1,800 <sup>(2)</sup>	0 <sup>(2)</sup>	200 <sup>(2)</sup>	583,454
62	217,027 <sup>(2)</sup>	30,000 <sup>(1)</sup>	176,695 <sup>(1)</sup>	83,910 <sup>(1)</sup>	73,316 <sup>(2)</sup>	28,463 <sup>(2)</sup>	2,760 <sup>(2)</sup>	4,187 <sup>(2)</sup>	2,178 <sup>(2)</sup>	0 <sup>(2)</sup>	200 <sup>(2)</sup>	618,741
63	229,650 <sup>(2)</sup>	25,000 <sup>(1)</sup>	170,776 <sup>(1)</sup>	78,695 <sup>(1)</sup>	64,510 <sup>(2)</sup>	27,012 <sup>(2)</sup>	2,789 <sup>(2)</sup>	4,511 <sup>(2)</sup>	2,315 <sup>(2)</sup>	0 <sup>(2)</sup>	200 <sup>(2)</sup>	605,460
64	235,015 <sup>(2)</sup>	24,000 <sup>(1)</sup>	166,726 <sup>(1)</sup>	86,192 <sup>(1)</sup>	70,575 <sup>(2)</sup>	19,377 <sup>(2)</sup>	2,789 <sup>(2)</sup>	4,511 <sup>(2)</sup>	2,523 <sup>(2)</sup>	0 <sup>(2)</sup>	200 <sup>(2)</sup>	611,907
65	209,005 <sup>(2)</sup>	2,750 <sup>(1)</sup>	143,512 <sup>(1)</sup>	44,526 <sup>(1)</sup>	22,770 <sup>(2)</sup>	9,805 <sup>(2)</sup>	2,789 <sup>(2)</sup>	4,511 <sup>(2)</sup>	2,523 <sup>(2)</sup>	0 <sup>(2)</sup>	1,500 <sup>(2)</sup>	443,699
66	210,905 <sup>(2)</sup>	3,100 <sup>(1)</sup>	144,186 <sup>(1)</sup>	41,536 <sup>(1)</sup>	19,196 <sup>(2)</sup>	12,725 <sup>(2)</sup>	2,789 <sup>(2)</sup>	4,523 <sup>(2)</sup>	2,523 <sup>(2)</sup>	0 <sup>(2)</sup>	1,050 <sup>(2)</sup>	442,532
67	220,235	12,870	168,870	71,935	47,962	11,866	2,789	4,523	2,523	0	1,250	544,823
68												
69												
1970												
71												
72												

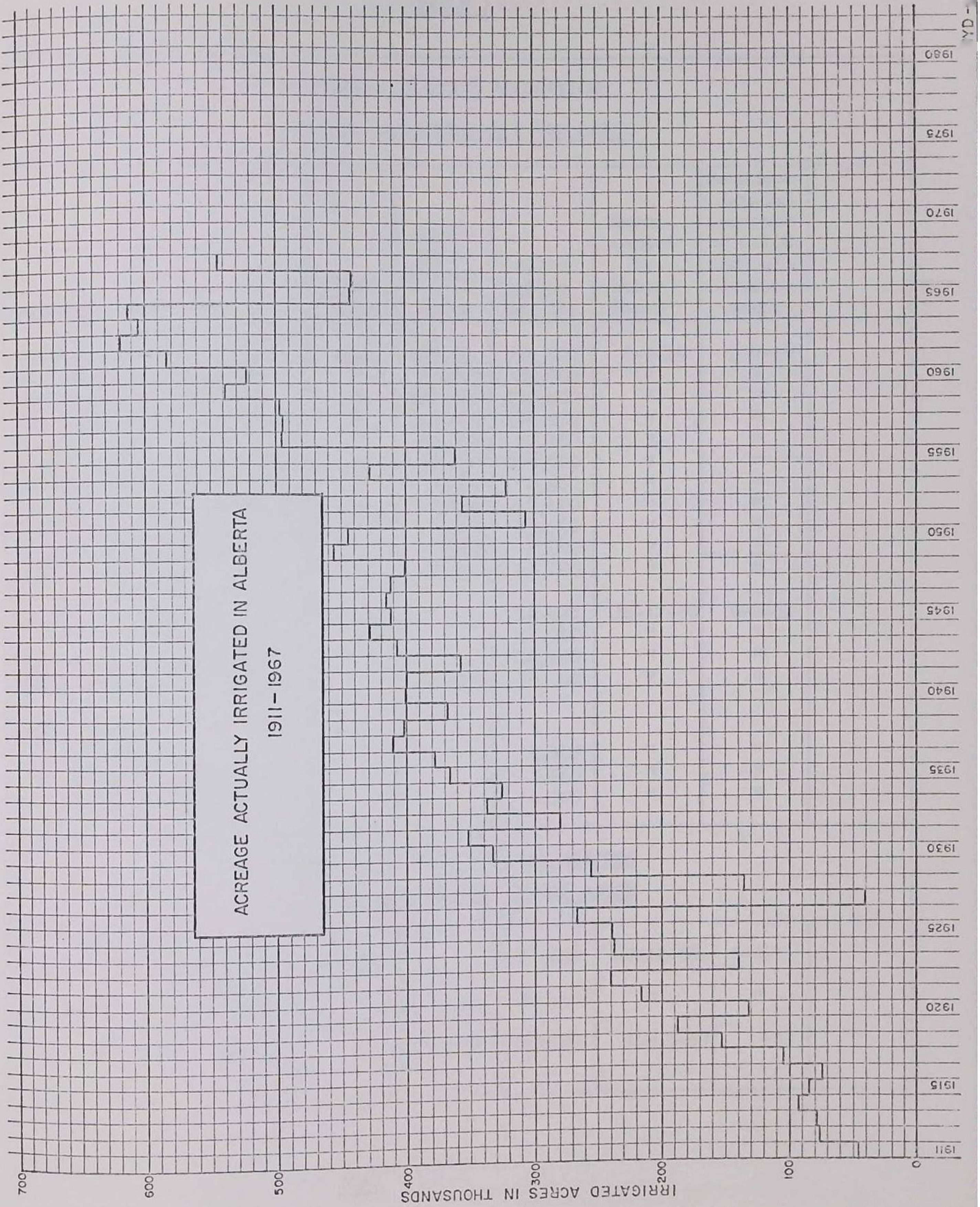
**NOTE** Acreage figures from early Irrigation Company annual reports, except as noted below.

(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 -

HYD - A - 477



ACREAGE ACTUALLY IRRIGATED IN ALBERTA  
1911 - 1967

TABLE 1

<u>SUMMARY OF FINAL ALLOCATIONS</u>					
<u>IN THE SASKATCHEWAN RIVER BASIN</u>					
Project	Province	Irri- gable Acreage acres	Allo- cation ac. ft.	Recom- mended by Water Board	Recommen- dation approved by O.I.C. from all Govern- ments
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)

SUMMARY OF RESERVATIONS IN GOOD STANDING						
IN THE SASKATCHEWAN RIVER BASIN						
Project	Province	Irri- gable Acreage acres	Allo- cation ac. ft.	Recom- mended by Water Board	Recommen- dation approved by O.I.C. from all Govern- ments	
Red Deer (Wm. Pearce)	Alta.	250,000	700,000	18-12-58	(Original Reserva- tion)	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 Reserva- tion)	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)

BATTLE CREEK BASIN

Project	Province	Irrigable Acres	Allocation ac. ft.	Recommended by Water Board	Recommendation Approved
<u>Final Allocations</u>					
Small Projects	Sask.	-	10,946	18-12-50	8-8-51
Richardson-Mackinnon Project	Sask.	-	3,054	18-12-50	8-8-51
<u>Tentative Allocations</u>					
Small Projects	Sask.	-	2,000	18-12-50	8-8-51
Vidora Project	Sask.	2,136	3,360	18-12-50	8-8-51
Consul Project	Sask.	1,500	2,400	18-12-50	8-8-51

MIDDLE CREEK BASIN

Project	Province	Irrigable acres	Allocation ac. ft.	Recommended by Water Board	Recommendation Approved
<u>Final Allocations</u>					
Small Projects	Sask.	-	1,027	18-12-50	8-8-51
Middle Cr. Reservoir Losses	Sask.	-	2,335	18-12-50	8-8-51

LODGE CREEK BASIN

Project	Province	Irrigable Acres	Allocation ac. ft.	Recommended by Water Board	Recommendation Approved
<u>Final Allocations</u>					
Small Projects	Sask.	-	600	18-12-50	8-8-51
Spangler Project	Sask.	1,322	2,970	18-12-50	8-8-51

QU'APPELLE RIVER BASIN

Project	Province	Irrigable Acres	Allocation ac. ft.	Recommended by Water Board	Recommendation Approved
<u>Final Allocations</u>					
Small Projects	Sask.	-	20,000	18-12-50	8-8-51