

PRAIRIE PROVINCES WATER BOARD

SEVENTH
ANNUAL REPORT
1954

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Regina, Saskatchewan.

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PRAIRIE PROVINCES WATER BOARD

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WARRANT AND FUNCTION OF THE BOARD

Under date of July 28, 1948, the Prairie Provinces Water Board was established by the Governments of Canada, Manitoba, Saskatchewan and Alberta, consisting of two members appointed by Canada and one from each of the three provinces.

The Board's functions are: to recommend the best use to be made of interprovincial waters in relation to associated resources in Manitoba, Saskatchewan and Alberta; upon the request of any one of the three provinces or Canada, to recommend the allocation of water as between each such province of streams flowing from one province into another province; and to report on any questions relating to specific projects for the utilization or control of common river or lake systems at the request of one or more of the Ministers or authorities charged with the administration of such river or lake systems.

To assist the Board in its studies, the Government of Canada, through the Prairie Farm Rehabilitation Administration, has made available the part-time services of the P.F.R.A. Hydrology Division which, in addition to its regular duties, acts as the Board's secretariat.

MEMBERSHIP OF THE BOARD

There has been one change this year in the membership of the Board, necessitated by the retirement of Mr. Ben Russell, former Board Member. By Order-in-Council 1173/54, the Government of Alberta appointed Mr. F.L. Grindley to the Board. The membership is now as follows:

- Dr. L. B. Thomson, Chairman of the Board: Director of
Prairie Farm Rehabilitation Administration, Regina.
- Mr. R.H. Clark: Chief of Water Development Projects Section,
Water Resources Division, Department of Northern
Affairs and National Resources, Ottawa.
- Mr. B. B. Hogarth: Director, Manitoba Water Resources Branch,
Winnipeg.
- Mr. E. J. Scammell: Chief Engineer, Saskatchewan Water Rights
Office, Regina.
- Mr. F.L. Grindley, Director, Alberta Department of Water Resources,
Edmonton.

REVIEW OF ACTIVITIES

Meetings The members of the Water Board have held meetings at the following places and dates:

In Regina	-	November 1, 1948
In Regina	-	February 2, 1949
In Regina	-	May 6, 1949
In Winnipeg	-	January 26, 1950
In Ottawa	-	April 25, 1950
In Winnipeg	-	December 18, 1950
In Regina	-	September 5, 1951
In Regina	-	December 17, 1952
In Regina	-	May 15, 1953
In Regina	-	October 9, 1953
In Edmonton	-	March 18, 1954.

Organization

The initial meeting of the Board was convened in Regina on November 1, 1948, where an acting secretary was appointed, tentative rules of procedure were adopted and subcommittees were set up to gather information on various matters. The Board carried on its studies using this combination of acting secretary and subcommittees until April 25, 1950, when it appointed Mr. W.M. Berry, P.F.R.A. Engineer, Regina, as Engineering Secretary. In accordance with Article 10 of the Agreement, the P.F.R.A. supplied the Engineering Secretary with technical (one engineer) and clerical staff, office accommodation and office supplies. This secretariat has carried out various studies under the Board's direction since that date. There has only been one additional change since then: in the early summer of 1952 the P.F.R.A. created an Hydrology Division, using the Water Board secretariat as its nucleus, to carry out flood and water studies for the P.F.R.A. The Head of the Hydrology Division continues to act as Secretary of the Board and his staff carries out the various investigations and studies under his direction for the Board.

Allocations By a letter dated March 24, 1949, the Honorable D.A. Ure of Alberta requested the Board to recommend suitable allocations for certain fully developed and partially developed irrigation projects in that province. On May 6, 1949, the Board recommended the allocations of waters for these projects: this allocation was subsequently ratified when the four governments passed appropriate orders-in-council as follows:

Canada Order-in-Council	4030/49
Alberta Order-in-Council	857/49
Manitoba Order-in-Council	1121/49
Saskatchewan Order-in-Council	1307/51

By a letter dated November 8, 1950, the Honorable I. C. Nollet of Saskatchewan requested the Board to recommend suitable allocations for certain existing and proposed projects in that province. On December 18, 1950, the Board recommended the allocations of waters for most of these projects: this recommendation was subsequently ratified when the four governments passed appropriate Orders-in-Council as follows:

Canada Order-in-Council	1874/51
Alberta Order-in-Council	1091/51
Manitoba Order-in-Council	1264/51
Saskatchewan Order-in-Council	1310/51

By a letter dated May 4, 1949, amended November 8, 1950 and again on December 18, 1950, the Honorable I.C. Nollet of Saskatchewan requested the Board to recommend a suitable allocation for the proposed South Saskatchewan River Project. The Board first considered this request on May 6, 1949, and due to insufficient supporting data the requested water was placed in the "reservation" class. The application was considered again on December 18, 1950, but action was postponed pending detailed water supply studies that would show all interprovincial effects of this proposal. With the receipt of Water Board Report #3 containing the requested water supply study, the Board again considered the application on September 5, 1951, when it was decided to postpone further action until the report of the Royal Commission, appointed by

the Canadian Government to investigate this project, became available and could be treated as additional evidence. This project was again considered by the Board on May 15, 1953, and it was then decided to recommend a "tentative allocation" of 960,000 acre-feet of water annually from the South Saskatchewan River for the purpose of the South Saskatchewan River Project: this recommendation was subsequently ratified when the four governments passed appropriate Orders-in-Council as follows:

Canada Order-in-Council	1953-973
Alberta Order-in-Council	991/53
Manitoba Order-in-Council	924/53
Saskatchewan Order-in-Council	1271/53

At the next meeting on October 9, 1953, the Board, in view of the fact that (a) their recommended allocation of water for the South Saskatchewan River Project had been for consumptive uses only, and (b) some questions had arisen as to the adequacy of the river flows to supply the necessary water for the non-consumptive uses of the project, decided to submit to the governments their views on this matter in the form of a resolution. This was done and the Board recommended to the governments that their understanding of the water supply situation and their actions (as contained in the resolution) be confirmed by Orders-in-Council. This recommendation was subsequently ratified when the four governments passed appropriate Orders-in-Council as follows:

Alberta Order-in-Council	1693/53
Saskatchewan Order-in-Council	2172/53
Canada Order-in-Council P.C.	1954-1169
Manitoba Order-in-Council	892/54

See Appendix A for priorities and classifications under which applications for water are treated as set up by the Board in May, 1949. See Appendix B for the details of the ratified allocations dated May 6, 1949, and December 18, 1950. See Appendix C for the Board's resolution dated October 9, 1953.

Studies

The initial work undertaken by the Board's subcommittees consisted of studying the requirements for a drainage map, additional gauging stations, estimates of the natural flow of the Saskatchewan River and its major tributaries, estimates of return flows for irrigation projects and the possibilities of navigation on the South, North and main Saskatchewan Rivers. The Water Board drainage map was completed and distributed by the end of 1950; certain new gauging stations were recommended on January 26, 1950, and are now in operation; gauging stations on wasteways of certain irrigation districts were placed in operation in 1951; review of the navigation possibilities of the Saskatchewan River and its major tributaries was initiated but, pending clarification of the perplexing Navigable Waters Protection Act, completion of this study has been left in abeyance.

The establishment of the secretariat in 1950 permitted the completion of the study of natural flows at several points in the Saskatchewan River Basin, see Water Board Report #1. The interprovincial downstream effect of the recommended allocation of water to Alberta was investigated and reported on in Report #2. A detailed water study of the interprovincial effects of various Alberta projects and the proposed South Saskatchewan River Project was incorporated in Report #3, while Report #4 compares the interprovincial effects of both separate and combined Red Deer-South Saskatchewan projects. In accordance with the Board's duty to "collate and analyze the data now available relating to the water and associated resources of interprovincial streams...", the Board has issued, in Report #5, the results of a study entitled "Evaporation from Lakes and Reservoirs on the Canadian Prairies".

The question of headwater storage and control, especially in the North Saskatchewan River Basin, is under general discussion. This subject will be receiving active consideration in the ensuing year.

Over-all studies of certain small watersheds have been completed. Although these studies have been undertaken for the P.F.R.A. they are of interest to the Water Board: these P.F.R.A. Hydrology Reports will be found listed in Appendix D of this report together with all the publications of the Board.

Work in Progress and Contemplated

The Economics Service of Canada Department of Agriculture is continuing its study, as requested by the Board, dealing with the basic economic factors relating to the development of the water resources in the Saskatchewan River system. The tentative title to be given to its study is "The Allocation and Utilization of Waters in the Saskatchewan River System".

The Board is still progressing with the preparation of its proposed resolution and brief outlining the necessity of expanding the existing hydrometric service; this resolution and brief, when completed, will be presented to the provinces and the Federal Government.

A procedure for handling "small projects" is still under consideration - the definition of terms proving to be quite difficult.

Additional overall studies of small watersheds are in progress, being undertaken jointly for P.F.R.A. and the Board.

L B Thomson

Chairman

W M Bury

Engineering Secretary

APPENDIX A - PRIORITIES & CLASSIFICATIONS

In May, 1949, the Board set out the following general principles to guide them in considering applications for allocation of water to serve developed or partially developed irrigation projects, which will, in effect, constitute priorities:

1. Projects which are fully developed and for which water had been appropriated by the Federal Government prior to the Natural Resources-Transfer-Agreement.
2. Projects which are fully developed and for which water had been appropriated by the Province concerned prior to July 28, 1948.
3. The completion of projects which are partially developed and which can be fully and beneficially developed within the appropriation as in #1 or #2 above.
4. The completion of projects with respect to which substantial works are now in existence and which works could, by the use of additional water and as shown by complete investigation, be made to serve larger areas in a beneficial manner--involving allocations over and above those provided for by prior Dominion and Provincial allocations.
5. Projects which are now under development by the Dominion and Provincial Governments and with respect to which an immediate beneficial use must be established in order to secure or protect an international allocation.

The Board also agreed to establish four separate classifications under which applications for water for individual projects will be treated, and the procedure to be followed is to be in accordance with the following:

Recording - shall be a procedure under which the Board may be informed of potential and possible water uses or developments within the jurisdictions represented in the Agreement. It is understood that each such recording shall not in any way constitute or be an undertaking by the Board to recommend the allocation of water or the granting of any rights for such purpose.

Reservation - shall be a procedure under which the Board may make a "reservation" of probable water requirements of specific projects. This will not comprise an allocation but shall represent an undertaking by the Board to the effect that, while the reservation is in good standing, no subsequent action will be taken by the Board which will have a detrimental effect upon the stipulated water without first thoroughly reviewing the status and requirements of the project for which the reservation was made and without affording to the representatives of the interested jurisdictions ample opportunity to make representations and to be heard. The Board shall, in making such a reservation, fix a period of time during which sufficiently complete plans and reports are to be prepared to enable the Board to consider further the allocation of water for this purpose: provided first, that if further information is not forthcoming in the stipulated period of time the reservation will lapse, and second, that the Board may, in its discretion, from time to time extend any period fixed for the production of such further information.

Tentative Allocation - shall be a procedure under which the Board may be requested to recommend to the Governments represented in the Agreement a tentative allocation of water for a specific project; such an allocation to be subject to review and possible subsequent modification or cancellation, either in whole or in part, prior to final allocation.

Final Allocation - shall be a procedure under which the Board may be requested to recommend to the Governments represented in the Agreement a final allocation of water for a specific project.

APPENDIX B - DETAILS OF ALLOCATIONS

ALLOCATION TO ALBERTA - recommended May, 1949

<u>Project</u>	<u>Irrigable acres</u>	<u>Allocations in acre-feet</u>
St. Mary & Milk River Development	465,000	796,000
Western Irrigation District	50,000	85,700
Eastern Irrigation District	281,000	562,000
Bow River Irrigation Development	240,000	478,534
United Irrigation District	34,000	51,000
Lethbridge Northern District	96,135	150,000
Mountain View Irrigation District	3,600	6,000
Leavitt Irrigation District	4,400	7,000
Aetna Irrigation District	7,300	13,000
Macleod Irrigation District	5,000	8,000
Private Projects	70,000	80,000
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TOTAL	1,256,435	2,237,234

(for Saskatchewan allocations, see over)

ALLOCATION TO SASKATCHEWAN - recommended December, 1950

<u>Project</u>	<u>Classif. - cation</u>	<u>Acre-feet (annually)</u>
<u>South Sask. Drainage Basin</u>		
Small projects		
- main stem	1 & 2	1,500
- tributaries	1 & 2	4,500
City of Saskatoon		
- municipal	1	11,426
- steam plant	1	31,260
Caron-Moose Jaw Diversion	2	12,600
Swift Current Irr. Project	3	55,000
Swift Current small projects	1 & 2	5,600
<u>Qu'Appelle Drainage Basin</u>		
Small projects	1 & 2	20,000
<u>Battle Creek Drainage Basin</u>		
Small projects		
- main stem	1 & 2	7,536
- tributaries	1 & 2	3,410
Richardson-McFinnon project	1	3,054
<u>Middle Creek Drainage Basin</u>		
Small projects	1 & 2	1,027
Middle Creek Reservoir losses	2	2,335
<u>Lodge Creek Drainage Basin</u>		
Small projects	1 & 2	600
Spangler project	1 & 2	2,970

Tentative Allocation

<u>South Sask. Drainage Basin</u>		
Regina-Moose Jaw Diversion		29,000
French Flats-Valley Park Projects		11,140
<u>Battle Creek Drainage Basin</u>		
Small irrigation development		
- main stem		1,000
- tributaries		1,000
Vidora Irrigation Project		3,360
Consul Irrigation Project estension		2,400

APPENDIX C

Resolution adopted by the Prairie Provinces Water Board, October 9, 1953.

WHEREAS the Agreement authorizing the Prairie Provinces Water Board, Section 11, states:

"Each of the parties hereto (Alberta, Saskatchewan, Manitoba and Canada) agrees that it will not within the limits of its jurisdiction construct or permit the construction of any project that will interfere with the allocation of waters resulting from a recommendation of the Board duly adopted pursuant to Section 5 hereof."

AND WHEREAS Section 12 states:

"Any water development project already constructed or to be constructed by any one of the parties hereto shall be operated as to maintain as far as possible the allocation of water determined by the Board".

AND WHEREAS the function of the Board 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;

AND WHEREAS the Board has made recommendations to the parties concerned for allocations of water for consumptive uses, such as irrigation, domestic and industrial, and such allocations have been approved by all parties, and such projects are assured an adequate supply of water on the basis of the best known hydrometric information;

AND WHEREAS in a similar manner an allocation of 960,000 acre feet annually has been recommended and approved for the consumptive purposes of the South Saskatchewan River Project;

AND WHEREAS the Government of Saskatchewan, in view of the fact that the South Saskatchewan River Project is a multiple-purpose one, including irrigation, hydro power, river regulation, flood control and industrial development, has requested the Board to review and confirm its actions so that they may be satisfied that sufficient water will be available for all purposes of this project;

AND WHEREAS these matters have been fully studied by the Board and it had previously agreed as follows:

"That the water supply studies show there is sufficient water for the purposes of this project".
(Minute 7-15, Sept. 1951)

THEREFORE, the Board considers it appropriate at this time to place before the Governments concerned the position of water supply in the Saskatchewan River watershed between the Provinces on the basis of present hydrometric information:

1. The allocations already made by the Board and confirmed by the parties to the Agreement have assured an adequate water supply for the full development of each project.
2. There is sufficient water in the South Saskatchewan River and its tributaries to permit the full development, not only of existing projects but also of certain proposed projects, including the South Saskatchewan River Project and the Red Deer Project.
3. The natural flow remaining in the River after water for consumptive uses has been diverted will provide for the full water storage requirements for the purpose of all proposed projects, including the South Saskatchewan River Project.
4. The estimated amounts of hydro electric power to be produced by the South Saskatchewan River Project have been based on the estimated flows available after all consumptive uses of existing and projected upstream developments have been provided for.
5. Two charts are attached in support of the Board's conclusions as outlined above.

THE BOARD, THEREFORE, RECOMMENDS to the parties of the Agreement that this understanding and the actions of the Board be confirmed by Order-in-Council.

Members of the
Prairie Provinces Water Board

(sgd) L. B. Thomson
L. B. Thomson, Chairman

(sgd) H. L. Johnston
H. L. Johnston (accredited representative of Canada Department of Natural Resources and Development)

(sgd) B. B. Hogarth
B. B. Hogarth

(sgd) E. J. Scammell
E. J. Scammell

(sgd) Ben Russell
B. Russell

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APPENDIX D - PUBLICATIONS

- Report #1 a/ - "Summary Report of Recorded and Natural Monthly Flows at Certain Points on the Saskatchewan River System", November, 1950.
- Report #2 a/ - "Stream Flow at Three Selected Points on South and Main Saskatchewan Rivers After Alberta's 1949 Request". December, 1950.
- Report #3 a/ - "Preliminary Report on Effects of Certain Major Projects in the Saskatchewan River Drainage Basin", March, 1951.
- Report #3 a/ (Appendix A) Period of study 1911-23, December, 1951.
- Report #3 a/ (Appendix B to) Period of study 1949-52 July, 1954.
- Report #4 a/ - "Comparison of Two Alternate Developments in Saskatchewan River Basin, October, 1951.
- Report #5 a/ - "Evaporation from Lakes and Reservoirs on the Canadian Prairies", December, 1952.
- P.F.R.A. Hydrology Report #3b/ - "Water Supply and Irrigation in the Battle Creek Basin", June, 1953.
- P.F.R.A. Hydrology Report #5b/ - "Water Supply and Water Use in the Lodge Creek Basin," October, 1953.
- P.F.R.A. Hydrology Report #6b/ - "Water Supply and Irrigation in the Many Island Lake Basin", January, 1954.
- First Annual Report of P.P.W.B. - 1948 b/
- Second Annual Report of P.P.W.B. - 1949 b/
- Third Annual Report of P.P.W.B. - 1950 b/
- Fourth Annual Report of P.P.W.B. - 1951 b/
- Fifth Annual Report of P.P.W.B. - 1952 b/
- Sixth Annual Report of P.P.W.B. - 1953 b/
- Seventh Annual Report of P.P.W.B. - 1954 b/
- Drainage Map - "P.P.W.B. Map of Alberta, Saskatchewan and Manitoba",
Scale: 1 inch = 25 miles.
- Types: one-color map on linen a/
two-color map on paper a/
four-color map on paper c/
five-color map on paper c/

a/ Not available for public distribution

b/ Available for limited public distribution

c/ Available for limited distribution - free to public agencies
- 75¢ per copy to private agencies.