

87

ANNUAL REPORT

FOR THE YEAR ENDING MARCH 31, 1988



PRAIRIE PROVINCES WATER BOARD

CANADA ALBERTA SASKATCHEWAN MANITOBA

ANNUAL REPORT

FOR THE YEAR ENDING MARCH 31, 1988



PRAIRIE PROVINCES WATER BOARD

306 - 1901 VICTORIA AVENUE REGINA, SASKATCHEWAN S4P 3R4

CANADA

ALBERTA

SASKATCHEWAN

MANITOBA

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INTRODUCTION

On October 30, 1969 Canada and the Provinces of Manitoba, Saskatchewan and Alberta entered into an agreement to share the flow and to consider the quality of eastward flowing interprovincial streams. Under Schedule C of that Master Agreement on Apportionment, the Prairie Provinces Water Board was reconstituted and was given the responsibility to administer the Agreement.

The Board met twice during the 1987-88 fiscal year; on May 5, 1987 in Hull, Quebec and on October 20, 1987 in Regina, Saskatchewan. As a result of retirements, Mr. D.V. Doyle replaced Mr. T.E. Weber as the Manitoba Board Member and Mr. L.J. Whitney replaced Mr. N. Mudry as the Manitoba Board Alternate. Both Messrs Weber and Mudry had been Board Member and Alternate, respectively, since the Board was reconstituted and had significantly participated in the original Prairie Provinces Water Board prior to 1969. Also, Mr. D. Davis became the Alternate Board Member for Environment Canada.

In the last fiscal year; the Committee on Hydrology met three times, the Committee on Water Quality met three times, and the Committee on Groundwater met three times; a total of nine committee meetings.

This report summarizes the activities and the progress of the Prairie Provinces Water Board, its Committees, and the Secretariat for the period April 1, 1987 to March 31, 1988.

RECONSTITUTION OF BOARD ADMINISTRATION

The original Prairie Provinces Water Board was formed on July 28, 1948. During the next 22 years (1948 to 1969 inclusive), the Engineering Secretary to the Board was a Federal Government PFRA employee who served in this capacity as part of his regular duties. The support staff for studies and office accommodation during these 22 years were provided by the PFRA in Regina at no charge.

The Master Agreement on Apportionment was signed on October 30, 1969. Schedule C of that Agreement reconstituted the Prairie Provinces Water Board and provided for the necessary Board staff, accommodation and supplies to be jointly financed by the four governments party to the Agreement. Following the reconstitution of the PPWB the members also agreed to the establishment of a semi-autonomous Board Secretariat.

The Board's change in administration policy was implemented when an Executive Director was appointed on July 1, 1972. The Board, as shown in the organization chart on page 1-9, now operates through an Executive Director and his staff, supported by three committees. With the appointment of a permanent staff, the By-Laws, Rules, and Procedures also became effective on July 1, 1972. The 1969 Master Agreement on Apportionment (as amended on July 5, 1984), the By-Laws, and the Rules and Procedures are appended to this Annual Report.

The employees of the Secretariat, for administrative purposes, are classified as Federal Public Servants but receive their direction entirely from the Board. The Board directly controls the operation of the Secretariat through approval of an Annual Budget. It currently has Federal spending authority up to an annual maximum expenditure of \$625 000 from funds provided under the Canada Water Act. The Provincial Governments' shares of current expenditures are recovered after the current financial year is completed.

ADMINISTRATIVE DECISIONS

Water Quality Indicators

The Board agreed to distribute for comment to its Member Agencies, the report "PPWB Water Quality Indicators for the Beaver River at the Alberta-Saskatchewan Boundary-Supporting Documentation" along with the Proposed Site Specific Water Quality Indicators for the Beaver River. The Support Documentation, which was prepared by Environment Canada, Water Quality Branch and the Board Secretariat, represents the first of eleven documents which will provide the background information and rationale used to formulate proposed site specific water quality indicators at each of the interprovincial monitoring sites. The Proposed PPWB Site Specific Water Quality Indicators Document for the Beaver River had been tabled with the Board in 1986 along with Proposed Indicators for the other ten interprovincial monitoring sites.

The Board also approved a "Fact Sheet" showing how the proposed Water Quality Indicators are to be used. If adopted, the Indicators would define boundary water quality that is acceptable to the Board for identifying and resolving interprovincial water quality concerns.

A contractor was hired by the Board to prepare Supporting Documentation for the Proposed Water Quality Indicators at an additional five interprovincial sites; South Saskatchewan, Red Deer (Alberta), North Saskatchewan, Battle and Saskatchewan Rivers. At the end of the fiscal year, two drafts of each of these documents had been prepared and reviewed by the Committee on Water Quality. Final Draft Documents will be presented to the Board in the next fiscal year.

Water Quantity and Water Quality Monitoring Programs for 1988-89

At PPWB Meeting No. 39, the Board approved the Proposed Hydrometric Monitoring Program for 1988-89, recommended by the Committee on Hydrology, including the deletion of the Reindeer River at the outlet of Reindeer Lake station and the addition of the Reindeer River above Devil Rapids station. The Board further approved the proposed meteorological monitoring stations as recommended by the COH and agreed that the Executive Director will write a letter to AES, Regional Directors, to inform

them of the Board's continuing requirement for meteorological data at the seventeen monitoring sites identified by the COH.

The 1988-89 PPWB Water Quality Monitoring Program, as proposed by the Committee on Water Quality, was approved by the Board.

Water Demand Update

The Board agreed that the Secretariat in cooperation with the Provincial Water Use Coordinators should, in 1988-89, update the water use tables contained in the 1982 PPWB report "Water Demand Study: Historical and Current Water Uses in the Saskatchewan-Nelson Basin". Once the tables have been prepared, the Board will review the information and decide on the nature and format of any subsequent report.

The Board also agreed that the Secretariat should assess the usefulness of the water demand data base to the Board and possible ways of streamlining the data base.

Handbook for the Administration of the Apportionment Agreement

The Board accepted the report entitled "Handbook for Administration of the Apportionment Agreement" - PPWB Report No. 84 for its information and use. The Committee on Hydrology will be responsible for maintaining the report and keeping it up to date.

The Langenburg-Russell Studies

The Board accepted the report entitled "Interprovincial Drainage Affecting the Rural Municipalities of Churchbridge and Langenburg in Saskatchewan and Shellmouth and Russell in Manitoba" prepared by the Task Force on Interprovincial Drainage for the purpose of resolving interprovincial drainage problems. The Board disbanded the Task Force and thanked it for completing its task. The Chairman of the Board wrote the Saskatchewan and Manitoba Members noting that the Board has accepted the report for use in resolving future interprovincial drainage problems and hoped that the report will assist the two provinces in resolving problems of interprovincial drainage.

PPWB Water Quality Report

The Board agreed that the Committee on Water Quality will re-evaluate the continuing need for the Water Quality Report prior to the possible production of the report in 1989. The results of this review will be reported to the Board at its Fall 1988 Meeting. This report summarizes the historical water quality data at the eleven PPWB interprovincial monitoring sites.

Potential Interprovincial Groundwater Concerns at Interprovincial Boundaries

The Board accepted the Committee on Groundwater report entitled "Potential Interprovincial Groundwater Concerns" and agreed that the COG should proceed with a review of current procedures for licensing and dealing with groundwater contamination.

Natural Flow Studies

At Meeting No. 39, the Board accepted the four natural flow study reports - Birch River, Stony Creek, Jackson Creek, Gopher and Bosshill Creeks. The Board agreed that it could not approve recommendations for monitoring at this time. The Board directed the COH to develop a plan of action that would categorize streams according to their potential for apportionment problems and provide a strategy for dealing with these problems. The strategy will address the questions of how to tell whether there is an apportionment problem and when to update natural flow studies.

Design Wind Study - Phase II

The Board agreed, at Meeting No. 39, that the Secretariat will contract out to Atmospheric Environment Service, in fiscal year 1988-89, Component A of Phase II of the Design Wind Study. This involves the modification of software to produce wind frequency diagrams from data assembled in Phase I. The completion costs of Component A will not exceed \$3 600.

PPWB Participation

At PPWB Meeting No. 39, the Board agreed to keep the Board Members participation to its original three provincial and two federal members as outlined in the Board By-Laws. This decision was made to maintain the efficiency and effectiveness of the Board.

BOARD STUDIES

The Secretariat, under the direction of the Board and with the cooperation of Board committees, is involved in several ongoing studies. The progress made on these studies in the fiscal year 1987-88 is described in this section.

Interprovincial Groundwater Concerns at the Alberta-Saskatchewan and Saskatchewan-Manitoba Boundaries

Based in part on information contained in the two PPWB Hydrogeologic Profile reports, Alberta-Saskatchewan Boundary (1985) and Saskatchewan-Manitoba Boundary (1986), the Committee on Groundwater prepared a report entitled "Potential Interprovincial Groundwater Concerns". This report was accepted by the Board at its Fall 1987 meeting. The Board directed the COG to proceed with a study to review and document existing groundwater legislation and related policies to determine how they deal with identified potential groundwater problems.

The Impact of Drainage on Downstream Watersheds

The Board, at its May 5, 1987 Meeting accepted a Task Force report entitled "Interprovincial Drainage Affecting the Rural Municipalities of Churchbridge and Langenburg in Saskatchewan, and Shellmouth and Russell in Manitoba", along with supporting documentation for the purposes of resolving interprovincial drainage problems. The Task Force was comprised of the Executive Director of the Secretariat and one member each from Saskatchewan and Manitoba.

The Board agreed that this document should be used for resolving the immediate problems of interprovincial drainage of Churchbridge and Langenburg in Saskatchewan, and Shellmouth and Russell in Manitoba and in resolving future interprovincial drainage problems that may occur elsewhere. The Board also felt that it was the member agencies' responsibility to keep the rural municipalities informed of provincial resolution of interprovincial drainage problems.

Natural Flow Studies on Small Interprovincial Basins

At the June 10, 1975 meeting of the Board, the Members recommended that a continuing effort be made by the Secretariat to define natural flow on small

interprovincial river basins. A list of streams was prepared and the Board agreed that the speed with which the studies were completed would depend on the availability of participating agencies.

During 1987/88, the Board accepted reports on Birch River, Gopher Creek, Bosshill Creek, Jackson Creek and Stony Creek. Studies which had been completed previous to 1987/88 include Pipestone Creek, Antler Creek, Assiniboine River, Boxelder Creek, Mackay Creek, Graham Creek, Battle River, Gainsborough Creek, Eyehill Creek, Big Gully Creek, Beaver River, Swan River and Woody River.

PFRA Hydrology Division, during the fiscal year, completed drafts of natural flow studies for the Overflowing and Red Deer (Saskatchewan) Rivers. The PPWB Secretariat also completed a draft report on Elm Creek. It is anticipated that these three natural flow study reports will be finalized in 1988/89.

Pipestone Creek Studies

A two-person Task Force was established to review the operational procedures of Moosomin Reservoir and problems relating to the apportionment of flows on Pipestone Creek. A number of hydrological problems and a minimum drawdown requirement have been identified and discussed by the Task Force. The Saskatchewan Water Corporation has prepared a draft report assessing the potential impact of the proposed Wawota irrigation project on Moosomin Reservoir and Pipestone Creek. This report is being reviewed by the Task Force.

Design Wind Study

Phase I of the Design Wind Study was completed by Atmospheric Environment Service of Environment Canada. Phase I consisted of putting wind information for 83 meteorological stations in the prairie provinces onto diskettes for computer analysis.

Monitoring Studies

Since 1986, a field program has been conducted by the Calgary office of Canada Water Resources Branch to gather irrigation return flow data in the Eastern Irrigation District, Western Irrigation District and Bow River Irrigation District for use in developing new return flow equations. It is anticipated that this field program will be completed in fiscal year 1988-89.

Supporting Documents for Proposed Site Specific Water Quality Indicators

A contractor completed two drafts of the Water Quality Supporting Documents for five interprovincial sites; South Saskatchewan, Red Deer (Alberta), North Saskatchewan, Battle and Saskatchewan Rivers. These documents contain background information and the rationale used to develop the proposed Water Quality Indicators at each site. Support documents for the five remaining sites for which Water Quality Indicators have been proposed will be initiated in 1988/89.

Task Force on Water Quality Analytical Methods

Test samples have been circulated to PPWB participating laboratories on a monthly basis, by Inland Waters Directorate, Environment Canada, since September 1982. Based on the results of this activity, the Water Quality Analytical Methods Task Force has prepared a draft report entitled "Initial Report on Assessing the Comparability of Water Quality Data Generated by the Federal (IWD) and Provincial Laboratories on the Prairies". The report will be distributed to Committee on Water Quality Members early next year.

Task Force on Water Quality Monitoring

The Board, at Meeting No. 37, agreed that the COWQ will establish a Water Quality Monitoring Task Force to review the existing PPWB Water Quality Monitoring Program and recommend an improved monitoring strategy. In March 1988, the COWQ discussed the future direction of the program and agreed to guidelines that the Task Force should use, to assist in its review. The Task Force plans to meet in 1988 and review a Water Quality Branch, Environment Canada, document entitled "Background Working Document: PPWB Water Quality Monitoring Program Review", and initiate its work on developing an effective Water Quality Monitoring Program for the PPWB.

BOARD COMMITTEES

The committees of the Board are responsible for providing technical advice on the various subjects of interprovincial interest to the Board. The Board Secretariat works with each of these committees to provide the Board with the technical information needed to make decisions related to interprovincial water management. This section describes the work of the three Board committees in fiscal year 1987-88.

Committee on Hydrology

The Committee on Hydrology met three times in this fiscal year; on June 1-2, 1987 in Winnipeg, Manitoba; on September 15-16, 1987 in Regina, Saskatchewan and on March 8-9, 1988 in Edmonton, Alberta. They reviewed a draft program for a Prairie Hydrology Workshop No. 3 and noted that the primary objective of this workshop would be to discuss the hydrologic, hydraulic, and water management computer models used by the Member Agencies. The workshop will be held in October 1988 in Saskatoon, Saskatchewan.

The Committee reviewed the flow records at the hydrometric stations "Reindeer River at outlet of Reindeer Lake" and "Reindeer River above Devil Rapids". They noted that the Reindeer River above Devil Rapids station appears to be a better monitoring site, and agreed that this station should be included in the 1988-89 list of PPWB hydrometric monitoring stations. This new station would replace the station named Reindeer River at outlet of Reindeer Lake.

The representative from Atmospheric Environment Service tabled a draft report entitled "An Attempt to Determine Evaporation at Middle Creek Reservoir". The Committee discussed the data source and procedures used in this study to compare the Meyer formula and Morton model for estimating evaporation. Results of the study were inconclusive with respect to which of the two methods provided better estimates of evaporation.

In response from a request by the COH, the National Hydrology Research Institute (NHRI) and the Hydrometeorological Research Division of AES in Saskatoon have agreed to consider jointly conducting an evaporation study to evaluate the performance of the Morton model and Meyer formula. The Committee prepared guidelines for the study, and agreed to review and comment on the draft study proposal after it has been

prepared by the NHRI. Member Agencies also indicated that they would cooperate with the NHRI in carrying out this project.

The list of meteorological stations that are used by the PPWB for interprovincial apportionment purposes was discussed and approved by the Committee. This list of stations was circulated to the AES Regional Directors (Alberta and Central Regions) advising them that these stations provide information required by the PPWB.

At the September 1987 Meeting, a member of Canada Water Resources Branch, Regina office made a presentation to the Committee on the computation procedures of the Qu'Appelle River natural flow SSARR model and discussed the problems associated with the existing model. The Committee agreed that the SSARR Model Sub-Committee should meet to review the problems with the existing SSARR model and recommend to the Committee a course of action to resolve these problems.

The Qu'Appelle River SSARR Model Sub-Committee met two times; on December 14, 1987 in Regina and on March 3, 1988 in Regina. The Sub-Committee recommended five work items for modifying the existing SSARR model. After reviewing these recommendations, the COH agreed that the Saskatchewan Water Corporation should be asked to provide a study proposal with time and cost estimates to complete the work recommended by the SSARR Model Sub-Committee. Saskatchewan Water Corporation agreed to prepare a study proposal.

The Committee noted that the combined recorded flow for the South Saskatchewan River at Highway #41 and Red Deer River near Bindloss hydrometric stations dropped below $42.5 \text{ m}^3/\text{s}$ (1 500 cfs) in mid-December 1987 due to the freezing of the river. To avoid the possible confusion, the Committee agreed that the "minimum discharge criterion" shown in the Handbook for Administration of the Apportionment Agreement should be revised to read "daily minimum discharge of $42.5 \text{ m}^3/\text{s}$ or one-half of the natural flow at the interprovincial boundary, whichever is less". They also noted that while flows did go below 42.5 m^3 that Alberta passed more than 50% of natural flow to Saskatchewan during this low-flow period so there was no violation to the 1969 Master Agreement on Apportionment.

Regarding natural flow studies for small interprovincial basins, the Committee reviewed and approved the Birch River natural flow study report, prepared by the Saskatchewan Water Corporation and approved three natural flow study reports; Gopher and Bosshill Creeks, Jackson Creek and Stony Creek, prepared by the PPWB Secretariat. Three other natural flow study reports for Overflowing River, Red Deer (Saskatchewan) River and Elm Creek are currently under review by the COH.

Committee on Water Quality

The Committee on Water Quality met three times in the past fiscal year. Meetings were held on July 21-22, 1987 in Calgary, Alberta; on January 15, 1988 a conference call meeting; and on March 1-2, 1988 in Regina, Saskatchewan.

The Committee updated the PPWB Water Quality Contingency Plan and reviewed unusual water quality conditions and spills on interprovincial streams.

The Committee approved the 1988-89 Water Quality Monitoring Program which is the same as the 1987-88 program with the exception of discontinuing samples for organophosphorus insecticides. The Committee also reviewed the Water Quality Analytical turn-around times of the Environment Canada laboratories.

The Members reviewed the significance of pesticide detections at PPWB sites, the protocol for PPWB cyanide analysis and the results of the Environment Canada forage fish monitoring program on the prairies.

The Committee reviewed the status of the special monitoring on the Beaver River at the Alberta-Saskatchewan boundary to evaluate the PPWB station location and the possible effects of the Cold Lake/Grande Centre regional sewage effluent discharge on water quality samples at the interprovincial boundary.

The Committee reviewed the status of the PPWB Water Quality Analytical Methods Task Force and discussed the Water Quality Monitoring Task Force Terms of Reference. The Members developed several guidelines that the Water Quality Monitoring Task Force should follow in reviewing and evaluating the PPWB Monitoring Program.

The Members reviewed the first and second drafts of the Water Quality Indicators Supporting Documents for the South Saskatchewan, Red Deer (Alberta), North Saskatchewan, Battle and Saskatchewan Rivers.

The Committee Members discussed concerns regarding the Proposed PPWB Site Specific Water Quality Indicator approach. They supported the use of the Site Specific Water Quality Indicators as a Board tool for assessing and identifying water quality at the interprovincial boundary and resolving potential interprovincial water quality concerns until a better approach is available.

Committee on Groundwater

The Committee on Groundwater met three times in this fiscal year. The meetings were held on June 18-19, 1987 in Winnipeg, Manitoba; on October 19, 1987 in Regina, Saskatchewan; and on February 17-18, 1988 in Edmonton, Alberta. At the June 1987 meeting, the Committee reviewed and approved the legend on the overlay sheets for water well yield and bedrock topography data for the "Hydrogeologic Profile Saskatchewan-Manitoba Boundary" report. A final version of mylar overlay sheets, prepared by the Secretariat, was circulated to the Member Agencies for their use.

The Committee prepared and submitted to the Board a brief report entitled "Potential Interprovincial Groundwater Concerns". This report outlines interprovincial groundwater management concerns and recommends to the Board that current procedures for licensing the use of groundwater and procedures for dealing with groundwater contamination in the three prairie provinces be reviewed to determine if they are relatively uniform and compatible. This brief report was accepted by the Board at its October 1987 Meeting.

At the February 1988 Meeting, the Committee discussed the existing groundwater legislation in the three prairie provinces and the approaches that may be

used to review existing groundwater related legislation and regulations. The Committee will also determine how the legislation deals with identified potential groundwater problems. The Committee asked the Secretariat, based on the comments suggested by the Members, to prepare a first draft of a matrix for use in evaluating existing legislation.

An agreement was reached between Alberta Environment and the WATDOC office on a procedure for entering groundwater reports into the WATDOC system. Documentation of groundwater reports in the prairie provinces are entered into the WATDOC system as time, staff and finances become available.

SECRETARIAT

Accommodation and Staff

The PPWB Secretariat is located in Room 306 of the Motherwell Building in Regina, Saskatchewan. The office is in the same building as the Western and Northern Region office of the Inland Waters Directorate, Conservation and Protection, Environment Canada and the headquarters of Prairie Farm Rehabilitation Administration. Financial, Administrative and Personnel services are provided through the staff of the Inland Waters Directorate of Conservation and Protection, Environment Canada.

Mr. Bruce Godwin retired after nine years as the Executive Director of the Secretariat and Mr. Richard Kellow was hired to take his place.

The Secretariat also hired a contractor, Mr. K.F. Born, to do drafting and report preparation work required for Board purposes.

Reports

The following reports were prepared either by the Secretariat or under the direction of Board Committees in the current fiscal year.

- PPWB Report No. 84 - Handbook for Administration of the Apportionment Agreement. April 1987 (Prepared by the PPWB Secretariat). Accepted by the Board in May 1987.
- PPWB Report No. 85 - Birch River at Saskatchewan - Manitoba Boundary Natural Flow (prepared by the Saskatchewan Water Corporation). Accepted by the Board in October 1987.
- PPWB Report No. 86 - Stony Creek at Saskatchewan-Manitoba Boundary Natural Flow (prepared by the PPWB Secretariat). Accepted by the Board in October 1987.
- PPWB Report No. 87 - Gopher and Bosshill Creeks at Saskatchewan-Manitoba Boundary (prepared by the PPWB Secretariat). Accepted by the Board in October 1987.

PPWB Report No. 88 - Jackson Creek at Saskatchewan-Manitoba Boundary (prepared by the PPWB Secretariat). Accepted by the Board in October 1987.

Information

The work of the Secretariat is primarily connected with the apportionment of streamflow, assessing water quality and with Committee and Board studies. These activities are reported under other sections in this report.

Several spills or unusual water quality conditions occurred on the South Saskatchewan, North Saskatchewan and Saskatchewan Rivers in the 1987-88 fiscal year. Member Agencies were kept informed, through the PPWB Interprovincial Water Quality Contingency Plan, of the action taken in these situations.

The Secretariat, in 1987-88, completed five draft Supporting Documents for the Proposed Site Specific Water Quality Indicators. In addition to preparing four of the five chapters and the appendices in each document, the Secretariat also prepared the tables and graphs for the chapter written by the contractor.

The Water Quality Specialist assisted Environment Canada in developing a computerized program to identify excursions to the Proposed Site Specific Water Quality Indicators. Some time was also spent in transferring water quality data files from the Water Quality Branch, Environment Canada computer to the PPWB Secretariat micro computer.

The Operations Engineer completed the report entitled "Handbook for Administration of the Apportionment Agreement", PPWB Report No. 84. The report was submitted and accepted by the Prairie Provinces Water Board at Meeting No. 38.

A summer student was hired to assist in updating the PPWB Water Demand data files. The Water Demand data is available from the Secretariat upon request, and was accessed several times during the current fiscal year.

An updated listing of all PPWB reports was prepared and is available upon request.

The staff made several presentations regarding the work of the Board during the year including presenting a paper entitled "Interprovincial Drainage - An Example" to the annual CWRA meeting in June 1987.

Updating of PPWB Monthly Natural Streamflow Estimates

The Secretariat is responsible for updating the Saskatchewan-Nelson basin monthly natural flow estimates. Work on bringing the monthly streamflow files up to date is done whenever possible.

Financial

Final claim for the fiscal years 1987-88 is shown on page 21. During the fiscal year 1987-88 expenditures totalled \$461 223 of which \$240 550 was for salaries.

STATEMENT OF EXPENDITURES

PRAIRIE PROVINCES WATER BOARD

FINAL CLAIM

For expenditures in accordance with the Prairie Provinces Water Board Agreement dated October 30, 1969 (see Section 10, Schedule C and Section 15 of the By-Laws).

FINANCIAL YEAR 1987-88

ITEMS	BUDGET FOR	
	1987-1988*	EXPENDITURES
Salaries	\$242 000	\$240 550
Fringe Benefits	21 000	\$ 20 559**
Computing Services	13 000	13 158
Natural Flow Reports and Studies	30 000	29 302
Consultant Studies	29 300	28 200
Personnel (Temporary Replacements)	9 600	7 658
Transportation and Communications	18 000	16 146
Information - Printing	13 500	8 777
Rentals	28 500	28 858
Materials and Supplies	6 000	9 290
Acquisitions	4 000	5 189
Maintenance	2 500	1 600
Support Documentation for Water Quality Indicators	<u>52 000</u>	<u>51 936</u>
SUB-TOTAL	\$469 400	\$461 223
Less Revenue from Sale of Books		340
Less Revenue missed from previous years		<u>110</u>
TOTAL		<u>\$460 773</u>
		=====

* As revised at the October 1987 Board Meeting

** Calculated at 9% of salaries less expenses associated with retirement of R.B. Godwin

Each Province's share of expenditures (one-sixth of \$460 773)
= \$76 795.

I hereby certify that, to the best of my knowledge and belief, the works in respect of which this claim is made have been satisfactorily performed and that the amount claimed is properly chargeable under the terms of the Prairie Provinces Water Board Agreement dated October 30, 1969.



Executive Director

Prairie Provinces Water Board

I hereby certify the amounts shown are appropriately documented by the Federal Department of Environment and represent expenditures for PPWB purposes.

Original Signed By

R. A. HALLIDAY

R.A. Halliday

Regional Director

Inland Waters Directorate

Western & Northern Region

Conservation and Protection

Environment Canada

MONITORING RESPONSIBILITIES

The 1969 Master Agreement on Apportionment directs "... that the Prairie Provinces Water Board shall monitor and report on the apportionment of waters set out in the provisions of the first and second agreements and ratified by the Master Agreement". In keeping with this, and with previous Board decisions, the following continuing action has been taken to monitor the quantity and quality of water at interprovincial boundaries.

Natural Flow Determination

The Water Resources Branch of Environment Canada continued to monitor streamflow at all hydrometric sites used to determine natural flow for apportionment purposes. Similarly, the Committee on Hydrology reviewed the list of hydrometric stations needed to determine natural flow for Board purposes and that list was approved by the Board. As of March 31, 1988, there were 113 stations classified by the Board as PPWB hydrometric monitoring stations. These stations are plotted on the map at the end of this report.

The Committee on Hydrology has identified seventeen AES meteorological monitoring stations in the three prairie provinces of which meteorological information is used by the Board for computing natural flow at the interprovincial boundaries for apportionment purposes.

The Board, at its October 1987 Meeting, approved the 1988-89 list of PPWB Meteorological Monitoring Stations as recommended by the COH.

Quarterly reports on natural flows, consumptive uses, and storage changes for the South Saskatchewan River basin in Alberta were prepared and distributed on a regular basis. Total annual recorded flow of 4 733 000 cubic decametres in the South Saskatchewan River below its junction with the Red Deer River is 72% of the total annual natural flow of 6 565 000 cubic decametres. A summary of recorded and natural flow volumes for 1987 at this apportionment point is shown on pages 30 and 31.

During the apportionment period of January 1 to December 31, 1987, daily recorded discharges of the South Saskatchewan River at the apportionment point have been $42.5 \text{ m}^3/\text{s}$ ($1\,500 \text{ ft}^3/\text{s}$) or more except for a five-day period (from December 16 to

20, 1987). During this period the daily recorded discharge dropped below $42.5 \text{ m}^3/\text{s}$. This decrease in flow was due to a large volume of water turning into ice. Daily natural flows for this low flow period, as computed by the Calgary office of Canada Water Resources Branch, were all below $20 \text{ m}^3/\text{s}$. However, during this period the flows delivered to Saskatchewan were well in excess of 50% of the natural flow, so there was no violation to the 1969 Master Agreement on Apportionment.

The natural flow of the Qu'Appelle River at the Saskatchewan-Manitoba boundary for the period April 1, 1987 to March 31, 1988 was 34 670 cubic decametres. Recorded flow, augmented by releases of 135 100 cubic decametres from Lake Diefenbaker, was 68 440 cubic decameters, 197% of natural flow. Recorded and natural flows covering the apportionment period of April 1987 to March 1988 are shown on page 32.

Natural flows on the South Saskatchewan River basin were calculated using the project depletion method and natural flows for the Qu'Appelle River basin were calculated using the Streamflow Synthesis and Reservoir Regulation (SSARR) model. Both procedures have been approved by the Board to calculate natural flow in these two basins.

Natural flows were also calculated for the North Saskatchewan River, Battle Creek, Lodge Creek, Middle Creek, Saskatchewan River and the Churchill River at interprovincial boundaries. Monthly recorded and natural flows for the apportionment period at these six sites are shown on pages 32 and 33. Recorded flows for five additional boundary sites are also listed on the same two pages.

Annual Water Use Report - Boxelder Creek Basin

The Board, at its June 5-6, 1984 Meeting (PPWB Meeting No. 32) agreed that Alberta and Saskatchewan would annually collect sufficient water use data to provide an accurate estimate of total water use in the Boxelder Creek basin. These data are recorded by the agencies and jointly reported to the Board. The total irrigation water use in the Alberta portion of the basin for 1987 was $3\,045 \text{ dam}^3$. In addition, Alberta diverted 826 dam^3 of flow to its four provincial storage projects and released 440 dam^3 back to the Boxelder Creek system. Based on the responses of the 1987 water use survey, conducted by the Saskatchewan Water Corporation, no water was diverted for irrigation purposes in the Saskatchewan portion of the Boxelder Creek basin.

Annual Report on Drainage Projects

The Board, at its November 8, 1983 Meeting (PPWB Meeting No. 31), accepted a COH brief report entitled "A Recommended Procedure to Deal With the Impact of Artificial Drainage on Downstream Flows" and agreed that the COH should: "... provide reports on drainage activities at future Board Meetings". In 1987, there were six new drainage projects licensed by the Saskatchewan Water Corporation while Manitoba and Alberta both reported no drainage projects were undertaken in 1987 that had the potential to affect any streams crossing interprovincial boundaries.

PPWB Water Quality Monitoring Program

The Water Quality Branch of Environment Canada continued to monitor monthly and quarterly data collected at eleven PPWB monitoring stations for the 93 parameters listed on page 27. These stations correspond with the eleven interprovincial hydrometric locations mapped on the last pages of this report. The monitoring program for 1987-88 had been reviewed by the COWQ and approved by the Board.

This monitoring program started in April 1974 and has continued since that time. All data obtained at the eleven PPWB monitoring stations from April 1974 to December 31, 1985 has been evaluated and published in the 1987 PPWB Water Quality report. A similar historical data report covering the period April 1, 1974 to December 31, 1988 will be prepared at a later date by the Secretariat.

PPWB Interprovincial Water Quality Monitoring data is collected to define water quality characteristics of rivers crossing the interprovincial boundaries and to establish compliance with the "1973 PPWB Water Quality Objectives", and the "Interim PPWB Water Quality Requirements for the Beaver River at the Alberta-Saskatchewan Boundary" for the parameters marked with an asterisk on page 27. The Board through the Secretariat continually reviews the water quality data for all PPWB stations to identify present and potential water quality concerns at the boundary. If the Proposed Site Specific Water Quality Indicators are approved by the Board, they will be used in this review process. Until that time, annual evaluations will be based on the "1973 PPWB Water Quality Objectives" and the "Interim PPWB Water Quality Requirements for the Beaver River at the Alberta-Saskatchewan Boundary", although the Board realizes that some may not be appropriate for prairie streams. A review of the 1987 Water Quality data from PPWB monitoring stations indicates that the Water Quality Objectives were exceeded at least once at each site, for one or more parameters. The PPWB station with the highest frequency of exceeded objectives was the Qu'Appelle River near Welby (36 exceeded objectives), followed by the Assiniboine River below Kamsack (34 exceeded objectives) and the Battle River near Unwin station (28 exceeded objectives).

The minimum dissolved oxygen level of 5.0 mg/litre was maintained at most PPWB sites, with the exceptions of the Beaver River, the Battle River, and the Carrot River at the interprovincial boundaries where dissolved oxygen dropped below this minimum level during the winter period. The objective for total nitrogen was exceeded 78 times in the last year at 9 of the 11 PPWB sites. The objective for total phosphorus as P was exceeded at 9 of the 11 PPWB stations (59 times during 1987). The Churchill River at the outlet of Wasawakasik Lake was the only river which experienced relatively low nutrient levels.

The Water Quality Objective for phenolic material (0.005 mg/litre) was exceeded only once at one of the PPWB stations (Qu'Appelle River near Welby) in 1987. This is a significant decrease from 1986 and 1985 when the phenolic material objective was exceeded four times and 26 times respectively.

The objective for cyanide was exceeded at 4 of the 11 PPWB stations. This objective was exceeded 6 times in 1987. The objective for manganese was exceeded at 4 of the 11 PPWB stations (34 times in the past year).

Persistent insecticides such as DDT, aldrin, dieldrin, endrin and heptachlor were not present at detectable levels at any PPWB station in 1987. MCPA was detected once at six PPWB sites in 1987. The number of sites that MCPA was detected are up since 1986 but the monitoring program shows that MCPA is seldom detected more than once at any site.

Several herbicides were detected at PPWB water quality monitoring stations in 1987. The herbicide 2,4-D was detected at most PPWB sites with the exception of the Churchill River station. Alpha BHC (detected 65 times) and Gamma BHC (lindane - detected 25 times) were present in many of the samples collected at the interprovincial boundary in 1987. Picloram was detected at four PPWB locations (North Saskatchewan, Beaver, Battle and Churchill Rivers) at the interprovincial boundary in 1987. Atrazine was also detected once in the North Saskatchewan River and once in the Assiniboine River during the 1987 calendar year.

Other Reports Dealing With Monitoring

The Board has accepted three reports that deal with quantity of water monitoring responsibilities. They are entitled "Report on the Administration of Apportionment Agreement", "Guidelines For Negotiating Equitable Apportionment", and "Procedures For Interprovincial Apportionment of the Waters of Battle, Lodge, and Middle Creeks". Additional reports have been prepared to enable Canada Water Resources Branch to make better estimates of natural flow. The procedures described in these reports have been approved by the Committee on Hydrology and are being used to monitor streamflow on the South Saskatchewan and Qu'Appelle Rivers and on the three tributaries to the Missouri River basin. Similar documents are being prepared to establish more precise water quality procedures and water quality indicators that can be used to more equitably monitor the quality of water passing from upstream to downstream provinces. These studies have been reported on in the section entitled "Board Studies".

PPWB WATER QUALITY MONITORING
1987 PARAMETER LIST

- | | |
|------------------------------|-------------------------------|
| * Aldrin | * Lead, total |
| Alkalinity, phenol. | o Magnesium, diss. |
| Alkalinity, total | +** Malathion |
| Aluminum, extractable | MCPA |
| N-Alkanes | * Mercury, total |
| * Arsenic, diss. | P,P-methoxychlor |
| * Barium, total | Mirex |
| BHC-alpha | Nickel, total |
| BHC-gamma (Lindane) | Nitrogen, diss., NO3+NO2 |
| Bicarbonate, calc. | Nitrogen, particulate |
| * Boron, diss. | Nitrogen, total Ammonia as N |
| * Cadmium, total | o* Nitrogen, total, calc. |
| * Calcium, diss. | Nitrogen, total, diss. |
| Carbon, diss., organic | * Oxygen, diss., DO |
| Carbon, organic, particulate | PCB, Arochlor 1242 |
| Carbonate, calc. | PCB, Arochlor 1254 |
| Chlordane-alpha | PCB, Arochlor 1260 |
| Chlordane-gamma | PCB, Arochlor total |
| o Chloride, diss. | o* pH |
| Chlorophyll A | o* Phenolics |
| o* Chromium, total | Phosphorus Ortho as P |
| Cobalt, total | Phosphorus, part. calc. |
| Coliforms, fecal | * Phosphorus, total, diss. |
| Coliforms, total | * Phosphorus, total, as P |
| * Color, true | # Picloram (Tordon) |
| o* Copper, total | o Potassium, diss. |
| * Cyanide, total | Residue, fixed, nonfilterable |
| * P,P-DDD | o* Residue, nonfilterable |
| * P,P-DDE | * Selenium, diss. |
| * O,P-DDT | o Silica, reactive |
| * P,P-DDT | Silvex |
| ** Dicamba | o* Sodium, diss. |
| ** Diclofopmethyl | o Solids, total diss., calc. |
| * Dieldrin | Specific Conductance |
| +** Dimethoate | o Sulfide |
| Endosulfan-alpha | o Sulphate, diss. |
| Endosulfan-beta | * Temperature |
| * Endrin | ** Triallate |
| * Fluoride, diss. | ** Trifluralin |
| Free CO2 | * Turbidity |
| Hardness, non carbonate | Vanadium, total |
| o Hardness, total, CaCO3 | * Zinc, total |
| * Heptachlor | 2,4-D |
| * Heptachlor, expoxide | 2,4-DB |
| Hexachloro-benzene | 2,4-DP |
| Hydroxide, calc. | 2,4,5-T |
| o* Iron, diss. | |

Collected at 5 sites only

* 1973 PPWB Objectives

o 1979 Interim PPWB Requirements for the Beaver River

** Report only if detected

+ Collected at 8 sites only during open water period

1987 FLOW DATA



**RECORDED AND NATURAL FLOWS,
CONSUMPTIVE USE, DIVERSION, AND STORAGE
(In Cubic Decametres)**

FOR THE 1987 APPORTIONMENT PERIOD

SOUTH SASKATCHEWAN RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	247 000	256 000	296 000	354 000	575 000	236 000	276 000	259 000	355 000	202 000	211 000	146 000	3 413 000
CONSUMPTIVE USE	840	1 630	4 100	48 350	444 090	482 340	410 210	273 790	157 930	78 530	2 070	900	1 904 780
CHANGE IN STORAGE	-97 210	-70 940	-64 040	36 860	89 840	135 660	81 230	118 120	-114 370	-70 920	-47 490	-60 060	-63 320
DIVERSION FROM BASIN	0	0	0	0	14 950	31 580	43 700	36 130	18 960	12 130	2 420	0	159 870
NATURAL FLOW ALTA. BDRY.	147 700	178 900	231 120	396 910	1 064 370	870 550	845 630	709 470	431 410	263 260	177 630	89 900	5 406 850

RED DEER RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	44 400	41 400	75 700	236 000	117 000	115 000	183 000	219 000	128 000	79 000	48 000	33 500	1 320 000
CONSUMPTIVE USE	0	0	0	-70	4 030	2 680	4 010	3 370	1 540	200	0	0	15 760
CHANGE IN STORAGE	-12 160	-13 530	-13 870	6 150	6 950	9 600	9 830	9 890	10 550	-380	-8 910	-25 120	-21 000
DIVERSION FROM BASIN	0	0	0	0	-14 950	-31 580	-43 700	-36 130	-18 960	-12 130	-2 420	0	-159 870
NATURAL FLOW ALTA. BDRY.	33 660	29 350	60 220	237 410	112 370	99 510	154 690	194 370	120 690	66 870	39 690	11 330	1 160 160

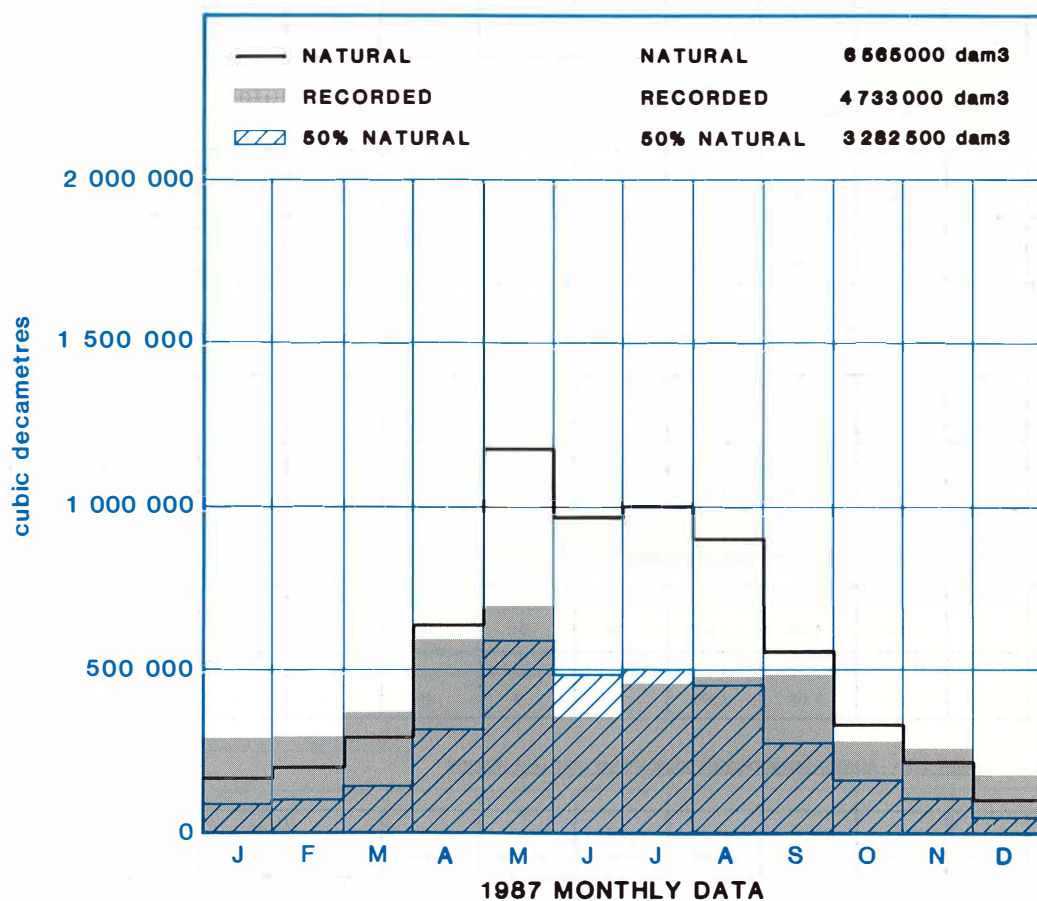
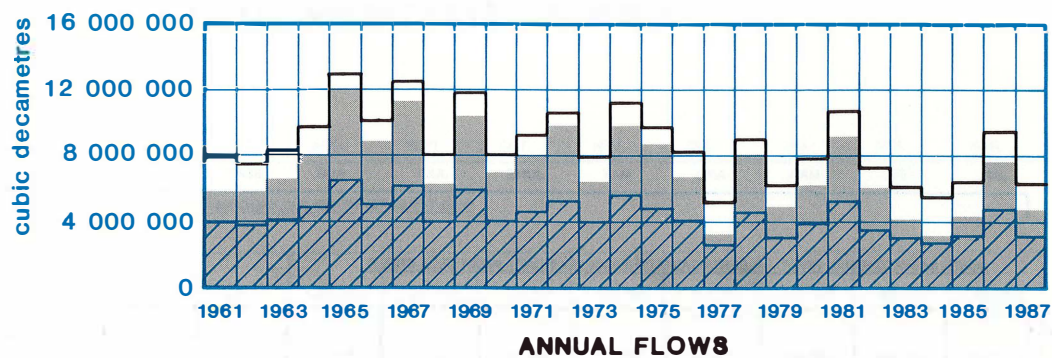
SOUTH SASKATCHEWAN RIVER -- BELOW JUNCTION WITH RED DEER RIVER

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	291 000	297 000	372 000	590 000	692 000	351 000	459 000	478 000	483 000	281 000	259 000	180 000	4 733 000
NATURAL FLOW	181 000	208 000	291 000	634 000	1 177 000	970 000	1 000 000	904 000	552 000	330 000	217 000	101 000	6 565 000

Recorded flows for the years 1970 to 1978 inclusive are based on WSC's preliminary data.

Natural flows for the South Saskatchewan and Red Deer Rivers have been calculated using WSC's preliminary data and using the methodology described in "Natural Flow Report, South Saskatchewan River Below Red Deer River" March 1974 (PPWB Report No. 45).

Quantities shown in table have been routed to Alberta boundary.



**SOUTH SASKATCHEWAN RIVER NEAR ALBERTA-SASKATCHEWAN BOUNDARY
(INCLUDES RED DEER RIVER)**

RECORDED AND NATURAL FLOWS - SUMMARY
SELECTED INTERPROVINCIAL STREAMS CROSSING ALBERTA-SASKATCHEWAN BOUNDARY
(In Cubic Decametres)

FOR THE 1987 APPORTIONMENT PERIOD

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC. TOTALS

NORTH SASKATCHEWAN RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY (NEAR DEER CREEK)

RECORDED FLOW	342 000	350 000	368 000	780 000	568 000	544 000	597 000	549 000	391 000	349 000	305 000	238 000	5 381 000
NATURAL FLOW	89 200	110 000	109 000	553 000	559 000	807 000	1 010 000	1 050 000	578 000	311 000	151 000	36 000	5 363 000

BATTLE CREEK -- ALBERTA-SASKATCHEWAN BOUNDARY

RECORDED FLOW	---	449	1 560	2 510	1 030	438	588	1 540	520	515	---	---	9 150
NATURAL FLOW	---	449	1 560	2 510	1 060	502	655	1 590	590	538	---	---	9 454

LODGE CREEK -- ALBERTA-SASKATCHEWAN BOUNDARY

RECORDED FLOW	---	2 850	15 800	3 700	232	44	206	458	13	7	---	---	23 310
NATURAL FLOW	---	3 270	16 600	3 670	457	107	267	472	23	8	---	---	24 870

MIDDLE CREEK -- ALBERTA-SASKATCHEWAN BOUNDARY

RECORDED FLOW	---	559	4 490	2 010	97	61	52	35	35	50	---	---	7 389
NATURAL FLOW	---	580	5 120	1 970	143	0	46	45	37	14	---	---	7 955

BEAVER RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY (AT COLD LAKE RESERVE)

RECORDED FLOW	6 100	6 390	7 730	117 000	70 400	46 900	20 400	13 600	11 700	7 960	5 190	3 390	316 800
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BATTLE RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY

RECORDED FLOW	3 400	3 110	5 570	103 000	35 200	13 500	8 880	9 590	15 300	9 050	5 490	2 650	214 700
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RECORDED AND NATURAL FLOWS - SUMMARY
SELECTED STREAMS CROSSING THE SASKATCHEWAN-MANITOBA BOUNDARY
(In Cubic Decametres)

FOR THE 1987-88 APPORTIONMENT PERIOD

APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. TOTALS

CHURCHILL RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (AT SANDY BAY)

RECORDED FLOW	2 050 000	2 010 000	1 880 000	1 960 000	1 860 000	1 800 000	1 850 000	1 880 000	2 010 000	2 070 000	1 880 000	1 950 000	23 200 000
NATURAL FLOW	1 800 000	2 390 000	2 190 000	2 230 000	1 890 000	1 620 000	1 410 000	1 180 000	1 230 000	1 170 000	1 120 000	1 230 000	19 480 000

SASKATCHEWAN RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY

ESTIMATED FLOW	2 090 000	1 650 000	1 100 000	912 000	1 040 000	996 000	919 000	749 000	617 000	665 000	817 000	603 000	12 160 000
APPORTIONMENT FLOW	2 390 000	1 930 000	1 300 000	1 310 000	1 430 000	1 200 000	1 010 000	595 000	335 000	228 000	339 000	645 000	12 720 000

QU'APPELLE RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (NEAR WELBY)

RECORDED FLOW	22 100	4 840	4 350	3 870	1 230	4 520	6 540	7 120	5 940	2 900	2 450	2 580	68 440
NATURAL FLOW	27 360	3 940	2 340	409	0	0	0	0	0	0	0	617	34 670

CARROT RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (NEAR TURNBERRY)

RECORDED FLOW	91 800	47 400	31 400	43 900	19 800	17 300	42 700	21 800	9 320	5 270	3 640	5 680	340 000
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RED DEER RIVER -- SASKATCHEWAN BOUNDARY (NEAR ERWOOD)

RECORDED FLOW	104 000	26 800	20 400	19 300	6 880	4 680	10 500	8 040	2 740	1 330	1 670	1 520	207 900
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ASSINIBOINE RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (AT KAMSACK)

RECORDED FLOW	74 700	12 100	4 180	5 190	1 130	433	904	1 820	2 190	6 560	4 140	4 880	118 200
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APPENDIX 1

BOARD MEMBERSHIP



PPWB MEMBERS

Chairman Ms. L. Goulet	Assistant Deputy Minister Conservation and Protection Environment Canada
Dr. H.M. Hill	Director General Prairie Farm Rehabilitation Administration Agriculture Canada
Mr. P.G. Melnychuk	Assistant Deputy Minister Water Resources Management Service Alberta Environment
Mr. D.L. MacLeod	Vice President Resource Management Saskatchewan Water Corporation
Mr. T.E. Weber (1967-Mar/88)	Director Water Resources Branch Manitoba Department of Natural Resources
Mr. D.V. Doyle (Appointed Mar/88)	Assistant Deputy Minister Manitoba Department of Natural Resources

Secretary Mr. G.W. Dunn	Water Quality Specialist Prairie Provinces Water Board

ALTERNATE MEMBERS

Mr. D.A. Davis
(Appointed Mar/88)

Director General
Inland Waters Directorate
Environment Canada

R.A. Halliday
(Oct/86-Mar/88)

Director
Western and Northern Region
Inland Waters Directorate
Conservation and Protection
Environment Canada

Mr. A.F. Lukey

Director
Engineering Branch
Prairie Farm Rehabilitation
Administration
Agriculture Canada

Mr. C.L. Primus

Assistant Deputy Minister
Environmental Protection Services
Alberta Environment

Mr. N. Mudry
(Oct/69-May/87)

Chief, Water Management
Water Resources Branch
Manitoba Department of Natural
Resources

Mr. L.J. Whitney
(Appointed Mar/88)

Chief, Water Management
Water Resources Branch
Manitoba Department of Natural
Resources

COMMITTEE ON HYDROLOGY

Terms of Reference

At the request of, and under the direction of the PPWB, the Committee on Hydrology shall investigate, oversee, review, report and recommend on matters pertaining to hydrology of interprovincial or interjurisdictional basins.

The Committee may consider such things as natural flow; forecasting; network design; collection, processing and transmission of data; basin studies and other items of interprovincial interest involving hydrology.

Approved: October 17, 1972
PPWB Minute 7-11

Members

Chairman	R.L. Kellow	Executive Director Prairie Provinces Water Board
	G.H. Morton	Water Resources Branch Environment Canada
	F.R.J. Martin	Prairie Farm Rehabilitation Administration Agriculture Canada
	R.K. Deeprose	Water Resources Management Services Alberta Environment
	V.M. Austford	Water Resources Branch Manitoba Department of Natural Resources
	A.B. Banga	Resource Management Saskatchewan Water Corporation
	R.F. Hopkinson	Atmospheric Environment Service Environment Canada
Secretary	A.J. Chen	Operations Engineer Prairie Provinces Water Board

COMMITTEE ON WATER QUALITY

Terms of Reference

At the request of and under the direction of the Prairie Provinces Water Board, the Committee on Water Quality shall investigate, oversee, review, report and recommend on matters pertaining to water quality of interprovincial and interjurisdictional basins.

Carrying out the above responsibilities may include such things as natural quality assessment; quality forecasting; network design; processing and dissemination of data; determination of implications of proposed projects that may significantly alter the water quality of interprovincial streams; consideration of special problems; establishment of procedures for emergency situations; and other items of interprovincial interest involving water quality.

Approved: October 17, 1972

PPWB Minute 7-33

Members

Chairman	R.L. Kellow	Executive Director Prairie Provinces Water Board
	W.D. Gummer	Water Quality Branch Environment Canada
	M. Morelli	Environmental Management Division Manitoba Department of Consumer and Corporate Affairs and the Environment
	R.G. Ruggles	Water Pollution Control Branch Saskatchewan Environment and Public Safety
	P.G. Shewchuk	Standards and Approvals Division Alberta Environment
	E.W. Allison	Prairie Farm Rehabilitation Administration Agriculture Canada
Secretary	G.W. Dunn	Water Quality Specialist Prairie Provinces Water Board

COMMITTEE ON GROUNDWATER

Terms of Reference

Recognizing the inter-relationship between surface and groundwater, the Committee on Groundwater shall, at the request of, and under the direction of the Prairie Provinces Water Board, investigate, oversee, review, report, and recommend on matters pertaining to quantity and quality of groundwater at or near interprovincial boundaries.

Responsibilities of the Committee will include: exchange of information; compilation and interpretation of existing data; recommendations on groundwater information and monitoring requirements; determination of implications of proposed projects which may impact the quantity and/or quality of waters at interprovincial boundaries; and other items of interjurisdictional interest involving groundwater.

Approved: November 18-19, 1981
PPWB Minute 26-25

Members

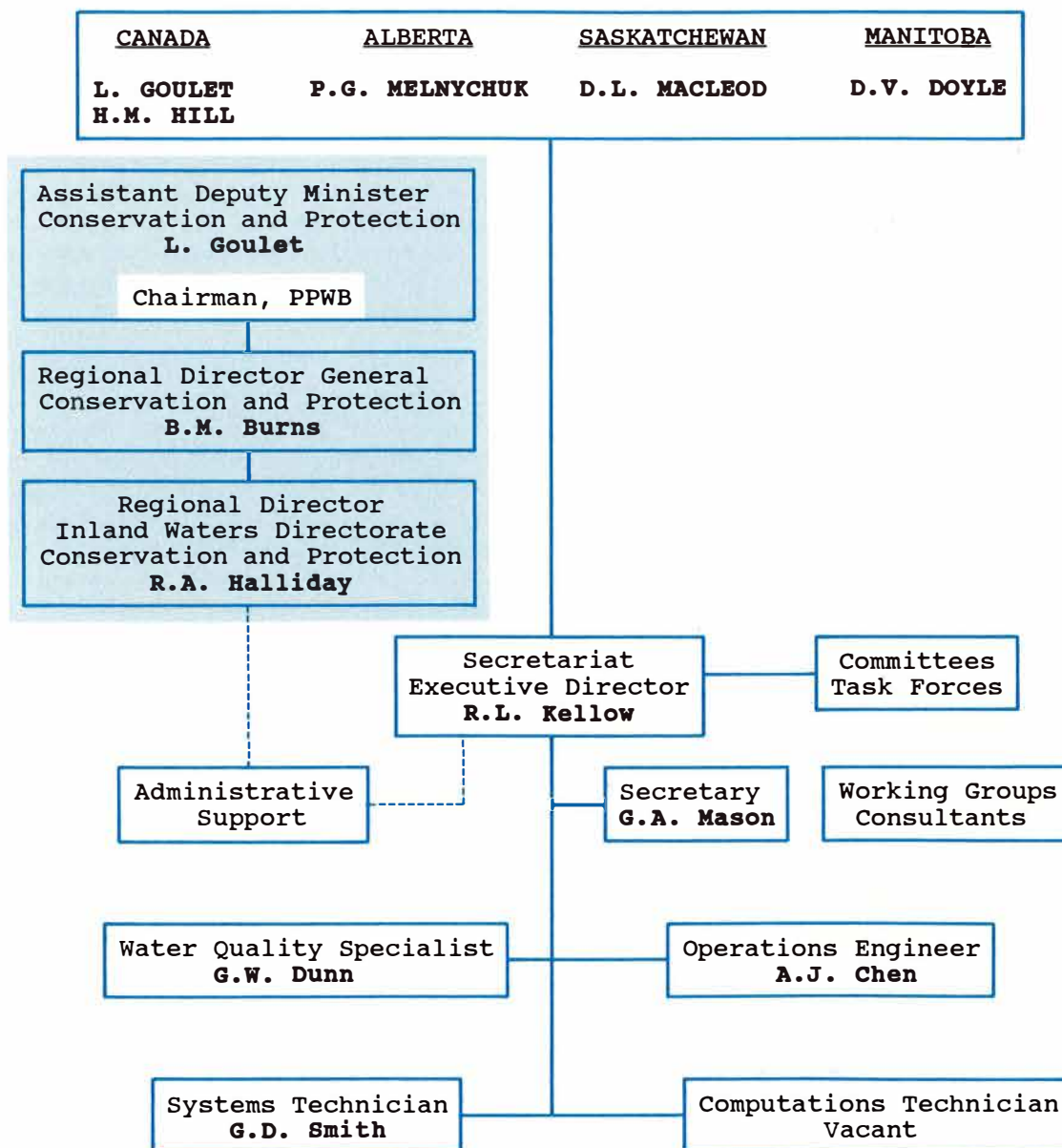
Chairman R.L. Kellow	Executive Director Prairie Provinces Water Board
D. McNaughton	Ground Water Division National Hydrology Research Institute Environment Canada
D.H. Pollock	Prairie Farm Rehabilitation Administration Agriculture Canada
H.A. Kerr	Earth Sciences Division Alberta Environment
U. Roeper	Resource Management Saskatchewan Water Corporation
L. Gray	Water Resources Branch Manitoba Department of Natural Resources

Secretary A.J. Chen	Operations Engineer Prairie Provinces Water Board

ORGANIZATION CHART

ORGANIZATION CHART

PRAIRIE PROVINCES WATER BOARD



MARCH 1988

APPENDIX 2

MASTER AGREEMENT AND BY-LAWS

MASTER AGREEMENT ON APPORTIONMENT

THIS AGREEMENT is made in quadruplicate this THIRTIETH day of OCTOBER, 1969, A.D.

BETWEEN:

HER Majesty, the Queen, in right of Canada, represented herein by the Minister of Energy, Mines and Resources

(Hereinafter called "Canada")

- and -

HER Majesty, the Queen, in right of Alberta, represented herein by the Minister in charge of Water Resources for Alberta

(Hereinafter called "Alberta")

- and -

HER Majesty, the Queen, in right of Saskatchewan, represented herein by the Minister in charge of The Water Resources Commission Act of the said Province

(Hereinafter called "Saskatchewan")

- and -

HER Majesty, the Queen, in right of Manitoba, represented herein by the Minister in charge of The Water Control and Conservation Branch Act of the said Province

(Hereinafter called "Manitoba")

WHEREAS under natural conditions the waters of the watercourses hereinafter referred to arising in or flowing through the Province of Alberta would flow into the Province of Saskatchewan and under the said conditions the waters of some of the said watercourses arising in or flowing through the Province of Saskatchewan would flow into the Province of Manitoba;

AND WHEREAS the Governor-in-Council has authorized Canada to enter into this agreement by Order-in-Council P.C. 1969-8/2051 dated October 29, 1969, and the Lieutenant Governors-in-Council for Alberta, Manitoba and Saskatchewan, respectively, have authorized them to enter into this agreement by the following Orders-in-Council:

Alberta	- O.C. 2053/69
Manitoba	- O.C. 1359/69
Saskatchewan	- O.C. 1612/69

AND WHEREAS the parties hereto deem it to be in their mutual interest that an agreement be reached among the four parties as to the apportionment as described in the schedules attached hereto of such interprovincial waters among the three Provinces;

AND WHEREAS Alberta and Saskatchewan have entered into an agreement, which agreement is attached to this agreement as Schedule A, that permits the Province of Alberta to make a net depletion of one-half the natural flow of water arising in or flowing through the Province of Alberta and that permits the remaining one-half of the natural flow of each such watercourse to flow into the Province of Saskatchewan, subject to certain *exceptions* as are set forth in the said agreement;

AND WHEREAS Saskatchewan and Manitoba have entered into an agreement, which agreement is attached to this agreement as Schedule B, that permits the Province of Saskatchewan to make a net depletion of one-half the natural flow of water arising in, and one-half of the water flowing into the Province of Saskatchewan, and that permits the remaining one-half of the flow of each such watercourse to flow into the Province of Manitoba, subject to such conditions and agreements as therein contained;

AND WHEREAS the parties are desirous that the Prairie Provinces Water Board (referred to herein as the Board), reconstituted by this agreement will be responsible for the administration of this agreement;

AND WHEREAS the parties hereto recognize the continuing need for consultation and co-operation as between themselves with respect to the matters herein referred to so that the interests of all the parties are best served;

NOW THEREFORE, THIS AGREEMENT (hereinafter known as the Master Agreement) witnesseth that each party agrees as follows:

Interprovincial Agreements

1. Alberta and Saskatchewan agree that the agreement between them (hereinafter called the First Agreement), a copy of which is set out in Schedule A to the Master Agreement, will become binding upon them upon the date that the Master Agreement is executed.
2. Saskatchewan and Manitoba agree that the agreement between them (hereinafter called the Second Agreement), a copy of which is set out in Schedule B to the Master Agreement, will become binding upon them upon the date that the Master Agreement is executed.
3. The parties agree to the apportionment of water between Alberta and Saskatchewan and Manitoba as provided in the First and Second Agreements and each party agrees to be bound by the said agreements as they relate to apportionment as if it were a party thereto.
4. The parties agree that the First or Second Agreement, or both, may be altered by an agreement in writing among the four parties to the Master Agreement, but not otherwise.
5. The parties agree that the First and Second Agreements will continue in force and effect until cancelled by an agreement in writing among the four parties to the Master Agreement.

Water Quality

6. The parties mutually agree to consider water quality problems; to refer such problems to the Board; and to consider recommendations of the Board thereon.

Monitoring

7. The parties agree that the monitoring of the quantity and quality of waters as specified in the First and Second Agreements, the collection, compilation and publication of water quantity and quality data required for the implementation and maintenance of the provisions of this agreement shall be conducted by Canada, subject to provision of funds being voted by the Parliament of Canada.

Administration

8. The parties agree, subject to Clause 9 of this agreement that if at any time, any dispute, difference or question arises between the parties with respect to this agreement or the construction, meaning and effect thereof, or anything therein, or the rights and liabilities of the parties thereunder or otherwise in respect thereto, then every such dispute, difference or question will be referred for determination to the Exchequer Court under the provisions of the Exchequer Court Act of Canada and each of the parties hereto agrees to maintain or enact the necessary legislation to provide the Exchequer Court with jurisdiction to determine any such dispute, difference, or question in the manner provided under the Exchequer Court Act.
9. The parties also agree that the Board, with the consent of the parties in dispute, may cause to be prepared, a factual report of the dispute for consideration by the parties hereto prior to the referral of the dispute to the Exchequer Court.
10. The parties agree that the Prairie Provinces Water Board shall monitor and report on the apportionment of waters as set out in the provisions of the First and Second Agreements and ratified by this Master Agreement.
11. The parties agree to revoke the agreement dated July 28, 1948, establishing the Prairie Provinces Water Board and to reconstitute the

Prairie Provinces Water Board in the form of Schedule C hereto and the said Schedule shall form and become part of this Master Agreement.

12. Because the Orders-in-Council referred to in Schedule D hereto will become redundant upon the execution of this Master Agreement, the parties agree to take steps to have them revoked.

13. The parties agree for the future application of the provisions of the Master Agreement (and the First and Second Agreements thereunder), to work together and to cooperate to the fullest extent each with the other for the integrated development and use of water and related resources to support economic growth according to selected social goals and priorities and to participate in the formulation and implementation of comprehensive planning and development programs according to their national, regional and provincial interest and importance.

14. No Member of the Parliament of Canada or Member of the Legislative Assemblies of the Provinces party to this agreement shall hold, enjoy, or be admitted to any share or part of any contract, agreement, commission or benefit arising out of this agreement.

IN WITNESS HEREOF Canada has caused its presents to be executed by its Minister of Energy, Mines and Resources, and Alberta has caused its presents to be executed by its Minister in charge of Water Resources, and Saskatchewan has caused its presents to be executed by its Minister in charge of The Water Resources Commission Act, and Manitoba has caused its presents to be executed by its Minister in charge of The Water Control and Conservation Branch Act on the day and year first mentioned above.

"A. Davidson"

Witness to the signature of the Minister
(Energy, Mines and Resources) for Canada

"J. J. Greene"

Minister (Energy, Mines and Resources) for
Canada

October 30, 1969

Date

"R. E. Bailey"

Witness to the signature of the Minister in
charge of Water Resources for Alberta

"Henry A. Ruste"

Minister in charge of Water Resources for
Alberta

October 30, 1969

Date

"Harold W. Pope"

Witness to the signature of the Minister in
charge of The Water Resources Commission
Act for Saskatchewan

"Allan R. Guy"

Minister in charge of The Water Resources
Commission Act for Saskatchewan

October 30, 1969

Date

"Thomas E. Weber"

Witness to the signature of the Minister in
charge of The Water Control and Conserva-
tion Branch Act for Manitoba

"Lenard S. Evans"

Minister in charge of The Water Control
and Conservation Branch Act for Manitoba

October 30, 1969

Date

SCHEDULE A

THIS AGREEMENT is made in quadruplicate this THIRTIETH day of OCTOBER, 1969, A.D.

BETWEEN:

HER Majesty, the Queen, in right of Alberta, represented herein by the Minister in charge of Water Resources for Alberta

(Hereinafter called "Alberta")

- and -

HER Majesty, the Queen, in right of Saskatchewan, represented herein by the Minister in charge of The Water Resources Commission Act of the said Province

(Hereinafter called "Saskatchewan")

WHEREAS under natural conditions the waters of the watercourses hereinafter referred to arising in or flowing through the Province of Alberta would flow into the Province of Saskatchewan and under the said conditions the waters of some of the said watercourses arising in or flowing through the Province of Saskatchewan would flow into the Province of Manitoba;

AND WHEREAS the parties hereto deem it to be in their mutual interest and in the interest of Manitoba that an agreement in principle be reached among the said three Provinces as to the apportionment of such interprovincial waters among them;

AND WHEREAS the parties hereto are of the opinion that an equitable apportionment of such waters as between the adjoining Provinces of Alberta and Saskatchewan would be to permit the Province of Alberta to make a net depletion of one-half the natural flow of water arising in or flowing through the Province of Alberta and to permit the remaining one-half of the natural flow of water of each such watercourse to flow into the Province of Saskatchewan, subject to certain

prior rights as are hereinafter set forth or may hereafter be mutually agreed upon in writing;

AND WHEREAS on the basis of the foregoing apportionment as between the Provinces of Alberta and Saskatchewan the parties hereto are of the opinion that in a similar manner, an equitable apportionment of the remainder of the natural flow of the said watercourses that flow into the Province of Manitoba after permitting the Province of Alberta to make its depletion of one-half thereof would be to permit the Province of Saskatchewan to make a net depletion of one-half of the said remainder and to permit the other one-half thereof to flow into the Province of Manitoba; and that the natural flow of any tributaries to the said watercourses which tributaries join the said watercourses in the Province of Saskatchewan without arising in or first flowing through the Province of Alberta could be apportioned one-half to the Province of Saskatchewan and one-half to the Province of Manitoba in a manner similar to the apportionment of waters as between the Provinces of Alberta and Saskatchewan, in all cases subject to such prior rights as may be mutually acknowledged by the said Provinces of Manitoba and Saskatchewan;

AND WHEREAS the parties hereto recognize the continuing need for consultation and co-operation as between themselves and with Manitoba with respect to the matters herein referred to so that the best and most beneficial use of the said waters may be made and the interests of all said provinces best served:

NOW THIS AGREEMENT witnesseth as follows:

1. IN THIS AGREEMENT:

- (a) "Natural flow" means the quantity of water which would naturally flow in any watercourse had the flow not been affected by human interference or human intervention, excluding any water which is part of the natural flow in Alberta but is not available for the use of Alberta because of the provisions of any international treaty which is binding on Alberta.

- (b) "Watercourse" means any river, stream, creek, or other natural channel which from time to time carries a flowing body of water from the Province of Alberta to the Province of Saskatchewan and includes all tributaries of each such river, stream, creek or natural channel which do not themselves cross the common boundary between the Provinces of Alberta and Saskatchewan. Such tributaries as do themselves cross the said common boundary between the Provinces of Alberta and Saskatchewan shall be deemed to be "watercourses" for the purpose of this agreement.
2. (a) The parties hereto shall mutually establish a method by which to determine the natural flow of each watercourse flowing across their said common boundary.
- (b) For the purpose of this agreement, the said natural flow shall be determined at a point as near as reasonably may be to their said common boundary.
- (c) Notwithstanding sub-paragraph (b) the point at which the natural flow of the watercourses known as the South Saskatchewan and Red Deer Rivers is to be determined may be, at the option of Alberta, a point at or as near as reasonably may be below the confluence of the said two rivers.
3. Alberta shall permit a quantity of water equal to one-half the natural flow of each watercourse to flow into the Province of Saskatchewan, and the actual flow shall be adjusted from time to time on an equitable basis during each calendar year, but this shall not restrict or prohibit Alberta from diverting or consuming any quantity of water from any watercourse provided that Alberta diverts water to which it is entitled of comparable quality from other streams or rivers into such watercourse to meet its commitments to Saskatchewan with respect to each watercourse.
4. Notwithstanding paragraph 3 hereof, the following special provisions shall apply as between the parties hereto with respect to the watercourse known as the South Saskatchewan River.
- (a) Alberta shall be entitled in each year to consume, or to divert or store for its consumptive use a minimum of 2,100,000 acre-feet net depletion out of the flow of the watercourse known as the South Saskatchewan River even though its share for the said year, as calculated under paragraph 3 hereof, would be less than 2,100,000 acre-feet net depletion, provided however Alberta shall not be entitled to so consume or divert, or store for its consumptive use, more than one-half the natural flow of the said South Saskatchewan watercourse if the effect thereof at any time would be to reduce the actual flow of the said watercourse at the common boundary of the said Provinces of Saskatchewan and Alberta to less than 1,500 cubic feet per second.
- (b) The consumption or diversion by Alberta provided for under the preceding sub-paragraph shall be made equitably during each year, depending on the actual flow of water in the said watercourse and the requirements of each Province, from time to time.
5. The parties hereto shall work together and co-operate to the fullest extent, each with the other, for the most effective, economical and beneficial use of waters flowing from the Province of Alberta into the Province of Saskatchewan, including the construction and operation of approved projects of mutual advantage to our Provinces on a cost-share basis proportionate to the benefits derived therefrom by each province, (the approval of which projects shall not be unreasonably withheld by either of the parties hereto) and shall enter into such other arrangements, agreements or accords with each other, and with the Governments of Canada and other Provinces to best achieve the principles herein agreed upon.

6. Notwithstanding paragraph 3 hereof, with respect to each of the three watercourses known as Battle Creek, Lodge Creek, and Middle Creek, the annual flow shall be apportioned such that, in each of the said watercourses, Alberta permits a quantity of water equal to 75 percent of the natural flow to pass the interprovincial boundary from Alberta to Saskatchewan.

"R. E. Bailey"

Witness to the signature of the Minister
in charge of Water Resources for Alberta

7. If at any time any dispute, difference or question shall arise between the parties or their representatives touching this agreement or the construction, meaning and effect thereof, or anything therein, or the rights or liabilities, of the parties or their representatives thereunder or otherwise in respect thereto then every such dispute, difference or question shall be referred for determination to the Exchequer Court under the provisions of The Exchequer Court Act of Canada, and each of the parties hereto agrees to enact the necessary legislation to provide the Exchequer Court with jurisdiction to determine any such dispute, difference or question in the manner provided under Section 30 of The Exchequer Court Act.

"Henry A. Ruste"

Minister in charge of Water Resources
for Alberta

8. This agreement shall become effective upon the execution of an agreement by Canada, Alberta, Manitoba and Saskatchewan relative to the apportionment of waters referred to in this agreement.

"Harold W. Pope"

Witness to the signature of the Minister
in charge of The Water Resources Com-
mission Act

IN WITNESS WHEREOF Alberta has caused these presents to be executed on its behalf by its Minister in charge of Water Resources, and Saskatchewan has caused these presents to be executed by its Minister in charge of The Water Resources Commission Act, both on the day and year first above mentioned.

"Allan R. Guy"

Minister in charge of The Water Re-
sources Commission Act

SCHEDULE B

THIS AGREEMENT is made in quadruplicate this THIRTIETH day of OCTOBER, 1969, A.D.

BETWEEN:

HER Majesty, the Queen, in right of Saskatchewan, represented herein by the Minister in charge of The Water Resources Commission Act of the said Province

(Hereinafter called "Saskatchewan")

- and -

HER Majesty, the Queen, in right of Manitoba, represented herein by the Minister in charge of The Water Control and Conservation Branch Act of the said Province

(Hereinafter called "Manitoba")

WHEREAS under natural conditions the waters of the watercourses hereinafter referred to arising in or flowing through the Province of Saskatchewan would flow into the Province of Manitoba;

AND WHEREAS the parties hereto deem it to be in their mutual interest and in the interest of Alberta that an agreement in principle be reached among the said three Provinces as to the apportionment of interprovincial waters among them;

AND WHEREAS the parties hereto are of the opinion that an equitable apportionment of such waters as between the adjoining Provinces of Saskatchewan and Manitoba would be to permit the Province of Saskatchewan to make a net depletion of one-half the natural flow of water arising in, and one-half the flow of water flowing into, the Province of Saskatchewan, and to permit the remaining one-half of the flow of water of each such watercourse to flow into the Province of Manitoba, subject to certain rights as may hereafter be mutually agreed upon in writing;

AND WHEREAS on the basis of the foregoing apportionment as between the Provinces of Saskatchewan and Manitoba, the parties hereto are of the opinion that in a similar manner, an equitable apportionment of the natural flow of the said watercourses arising in or flowing through the Province of Alberta would be to permit the Province of Alberta to make a net depletion of one-half thereof, subject to such prior rights as may be mutually acknowledged by the said Provinces of Alberta, Saskatchewan and Manitoba;

AND WHEREAS the parties hereto recognize the continuing need for consultation and co-operation as between themselves and with Alberta with respect to the matters herein referred to so that the interests of all said Provinces are best served;

NOW THIS AGREEMENT witnesseth as follows:

1. IN THIS AGREEMENT:

- (a) "Natural flow" means the quantity of water which would naturally flow in any watercourse had the flow not been affected by human interference or human intervention.
- (b) "Watercourse" means any river, stream, creek, or other natural channel which from time to time carries a flowing body of water from the Province of Saskatchewan to the Province of Manitoba and includes all tributaries of each such river, stream, creek or natural channel which do not themselves cross the common boundary between the Provinces of Saskatchewan and Manitoba. Such tributaries as do themselves cross the said common boundary between the Provinces of Saskatchewan and Manitoba shall be deemed to be "watercourses" for the purpose of this agreement.

2. (a) The parties hereto shall mutually establish a method by which to determine the natural flow of each watercourse flowing across their said common boundary.
- (b) For the purpose of this agreement, the said natural flow shall be determined at a point as near as reasonably may be to their said common boundary.
3. Saskatchewan shall permit in each watercourse the following quantity of water to flow into Manitoba during the period from April 1 of each year to March 31 of the year following: A quantity of water equal to the natural flow for that period determined at the point referred to in paragraph 2(b) hereof, less
 - (a) one-half the water flowing into Saskatchewan in that watercourse from Alberta, and
 - (b) any water which would form part of the natural flow in that watercourse but does not flow into Saskatchewan because of the implementation of any provision of any subsisting water apportionment agreement made between Alberta and Saskatchewan and approved by Manitoba, and
 - (c) one-half the natural flow arising in Saskatchewan.
4. Saskatchewan shall be entitled during such period to consume or to divert or store for its consumptive use the water it is not required to permit to flow into Manitoba in each watercourse under paragraph 3 hereof, but such consumption or diversion shall be made equitably depending on the actual flow of water in each watercourse and the requirements of each Province from time to time, but Saskatchewan shall permit sufficient water to flow into Manitoba to meet its commitments during such period under paragraph 3 hereof.
5. The parties hereto shall work together and co-operate to the fullest extent, each with the other, for the use of waters flowing from the Province of Saskatchewan into the Province of Manitoba, including the construction and operation of approved projects of mutual advantage to the said Provinces on a cost-share basis proportionate to the benefits derived therefrom by each Province (the approval of which projects shall not be unreasonably withheld by either of the parties hereto) and shall enter into such other arrangements, agreements or accords with each other, and with the Governments of Canada and other Provinces to best achieve the principles herein agreed upon.
6. If at any time any dispute, difference or question shall arise between the parties or their representatives touching this agreement or the construction, meaning and effect thereof, or anything therein, or the rights or liabilities of the parties or their representatives thereunder or otherwise in respect thereto then every such dispute, difference or question shall be referred for determination to the Exchequer Court under the provisions of The Exchequer Court Act of Canada, and each of the parties hereto agrees to maintain or enact the necessary legislation to provide the Exchequer Court with jurisdiction to determine any such dispute, difference or question in the manner provided under The Exchequer Court Act.

The actual flow shall be adjusted from time to time by mutual agreement on an equitable basis during such period but this shall not restrict or prohibit Saskatchewan from diverting, storing or consuming any quantity of water from any watercourse provided that Saskatchewan diverts water to which it is entitled of comparable quality from other streams or rivers into such watercourse to meet its commitments to Manitoba with respect to each watercourse.

7. This agreement shall become effective upon the execution of an agreement by Canada, Alberta, Manitoba and Saskatchewan relative to the apportionment of waters referred to in this agreement.

IN WITNESS WHEREOF Saskatchewan has caused these presents to be executed by its Minister in charge of The Water Resources Commission Act, and Manitoba has caused these presents to be executed by its Minister in charge of The Water Control and Conservation Branch Act on the day and year first above mentioned.

"Harold W. Pope"

Witness to the signature of the Minister in charge of The Water Resources Commission Act

"Allan R. Guy"

Minister in charge of The Water Resources Commission Act

"Thomas E. Weber"

Witness to the signature of the Minister in charge of The Water Control and Conservation Branch Act

"Leonard S. Evans"

Minister in charge of The Water Control and Conservation Branch Act.

SCHEDULE C

PRAIRIE PROVINCES WATER BOARD AGREEMENT

THIS AGREEMENT made this THIRTIETH day of OCTOBER, 1969, A.D.

BETWEEN:

THE GOVERNMENT OF CANADA,
hereinafter called "Canada"

- and -

THE GOVERNMENT OF MANITOBA,
hereinafter called "Manitoba"

- and -

THE GOVERNMENT OF SASKATCHEWAN,
hereinafter called "Saskatchewan"

- and -

THE GOVERNMENT OF ALBERTA,
hereinafter called "Alberta"

1. Manitoba, Saskatchewan, Alberta and Canada agree to establish and there is hereby established a Board to be known as the Prairie Provinces Water Board to consist of five members to be appointed as follows:

- (a) two members to be appointed by the Governor General in Council, one of whom shall be Chairman of the Board, on the recommendation of the Minister of Energy, Mines and Resources,
- (b) one member to be appointed by the Lieutenant Governor in Council of each of the Provinces of Manitoba, Saskatchewan and Alberta.

2. Functions

The Board shall oversee and report on the Master Agreement (including the First and

Second Agreements thereunder) executed by Canada, Alberta, Manitoba and Saskatchewan for the apportionment of waters flowing from one Province into another Province; shall take under consideration, comprehensive planning, water quality management and other questions pertaining to water resource management referred to it by the parties hereto; shall recommend appropriate action to investigate such matters and shall submit recommendations for their resolution to the parties hereto.

3. Composition of Board

The members of the Board shall be chosen from those engaged in the administration of water resources or related duties for Manitoba, Saskatchewan, Alberta or Canada, as the case may be, and shall serve as members of the Board in addition to their other duties.

4. Duties of the Board

In accordance with its functions, the duties of the Board shall be as follows:

- (a) to review, collate, and analyze stream-flow data and prepare reports and recommendations on the apportionment of water,
- (b) to review water quality problems, particularly such problems located at the interprovincial boundaries, and to recommend to the parties hereto, appropriate management approaches for their resolution including the establishment of new institutional arrangements,
- (c) to develop recommendations on other water matters, in addition to problems on water quality, referred to the Board by any party hereto including the review and analysis of existing information and the requesting of additional studies and assistance by appropriate governmental agencies to provide information for formulating its recommendations,

- (d) to promote through consultation and the exchange of information the integrated development of water resources of inter-provincial streams,
- (e) to cause to be prepared with the consent of the parties involved factual reports on disputes arising out of the water apportionment for consideration by the parties hereto,
- (f) to ensure the co-ordination of such technical programs as water quantity and quality monitoring and streamflow forecasting required for the effective apportionment of water.

5. Confirmation of the Board's Recommendations

A recommendation of the Board with respect to any matters referred to it under Section 2 shall, subject to the Master Agreement for the apportionment of water, become effective when adopted by Orders-in-Council passed by Canada and each of the Provinces.

6. Authority of Board

The Board shall have authority to correspond with all Governmental organizations and other sources of information in Canada or abroad concerned with the administration of water resources, and such other authority as may be conferred on the Board from time to time by agreement between the parties hereto; all agencies of the four governments having to do with the water and associated resources in the area covered by the Agreement shall be required to supply the Board with all data in their possession requested by the Board.

7. Records

The records relating to the water resources of the three provinces collected and compiled by the P.F.R.A. organization at Regina shall be made available to the Board.

8. Meetings of the Board

The Board shall meet at the call of the Chairman and meetings shall be called at least twice annually; the expenses of the members shall be borne by their respective governments.

9. Reports

The Board shall submit an annual progress report outlining work done and work contemplated in the agreed program to each of the responsible Ministers of the parties hereto and such other reports as may be requested by any one of such Ministers.

10. Operation of the Board

The Secretary for the Board and such other technical and clerical staff as may be required, with a headquarters at Regina, shall be Federal or Provincial public servants. The cost of administration, excluding the cost of monitoring as described in Section 7 of the Master Agreement, but including staff, accommodation, supplies and incidental expenses of the Board, shall be borne by the parties hereto on the basis of one-half by Canada and one-sixth by each of the Provinces. The Board shall prepare for approval of the parties hereto, work program, staff requirements, annual budgets and five-year forecasts and such other reports as may be required in the operation of the Board.

- 11. Any water development project already constructed or to be constructed by any one of the parties shall be so operated as to maintain the apportionment of water as set out in the Master Agreement (and the First and Second Agreements thereunder) for the apportionment of waters of interprovincial streams.

SCHEDULE D

PREVIOUS ALLOCATIONS OF INTERPROVINCIAL WATERS
 APPROVED BY ORDERS-IN-COUNCIL BY THE GOVERNMENTS OF
 CANADA, ALBERTA, MANITOBA, AND SASKATCHEWAN

<u>Item</u>	<u>Order-in-Council</u>			
	<u>Canada</u>	<u>Alberta</u>	<u>Saskatchewan</u>	<u>Manitoba</u>
Allocation of water for specific projects in Alberta	4030/49	857/49	1307/51	1121/49
Allocation of water for specific projects in Saskatchewan	1874/51	1091/51	1310/51	1264/51
Allocation of water for South Saskatchewan River Project in Sask- atchewan	973/53	991/53	1271/53	924/53

BY-LAWS

PART I

1. In these By-Laws:

- (a) "Agreement" means the Prairie Provinces Water Board Master Agreement (including the First and Second Agreements thereunder) executed the Thirtieth day of October, 1969, A. D. by Canada, Alberta, Saskatchewan and Manitoba.
- (b) "Alternate" means Alternate Member of the Prairie Provinces Water Board.
- (c) "Board" means the Prairie Provinces Water Board.
- (d) "By-Laws" means the ordinances adopted by the Board for the regulation of the Board's internal affairs.
- (e) "Chairman" means Chairman of the Prairie Provinces Water Board.
- (f) "Executive Director" means the senior officer of the Secretariat.
- (g) "Member" means Member of the Prairie Provinces Water Board.
- (h) "Ministers" means the responsible ministers of the governments which are party to the Agreement.
- (i) "Secretariat" means the operational unit established by the Board to carry out the day-to-day affairs of the Board.
- (j) "Schedule C" means the Prairie Provinces Water Board Agreement under the Master Agreement (1969) executed by Canada, Alberta, Saskatchewan and Manitoba establishing the Prairie Provinces Water Board.

PART II

The following shall be the By-Laws of the Prairie Provinces Water Board.

1. Objectives

The objectives of the Board shall be to promote the integrated development and use of water and related resources to support economic growth according to selected social goals and priorities, and to participate in the formulation and implementation of comprehensive planning and development programs according to their national, regional and provincial interest and importance.

In general, the Board will provide coordination and liaison between water resource agencies and will advise governments on the planning, development and management of interprovincial waters.

In particular, the Board will ensure the equitable apportionment of water flowing from one province into another province in accordance with the Agreement and will promote effective water quality management of interprovincial streams relative to standards and procedures adopted by the Board from time to time.

2. Membership

In accordance with Section 1 of Schedule "C", the Prairie Provinces Water Board shall consist of five Members to be appointed as follows:

- (a) two Members to be appointed by the Governor General in Council, one of whom shall be Chairman of the Board;
- (b) one Member to be appointed by the Lieutenant Governor in Council of each of the Provinces of Manitoba, Saskatchewan and Alberta.

3. Alternate Members

Each Member, including the Chairman, shall arrange for the appointment of an Alternate Member to act on his behalf during his absence, in which case the Alternate shall enjoy all the rights and privileges conferred on the Member.

4. Meetings and Notice

The Board shall meet at least twice a year by the call of the Chairman. Any Member may request a meeting of the Board at any time, in which case the Chairman must call the meeting within one month (30 days).

Meetings of the Board shall be called with at least 14 days notice unless every Member agrees otherwise.

5. Quorum

Meetings of the Board shall be official when all Members or their appointed Alternates are present.

6. Voting

All recommendations to government, all By-Laws and budgets-in-total shall require unanimous approval. The majority of votes determines a question on any other matter. In the event of a tie, the Chairman shall cast the deciding vote.

7. Powers

In accordance with the duties, functions and operations of the Board, as contained in Schedule "C", the Board shall have the power to authorize expenditures within the limits of approved budgets for the operations of the Secretariat, for the employment of staff, or for any other purposes necessary for administering the Agreement and furthering the objectives of the Board.

8. Authority

Within the general responsibilities given to it, the Board shall determine its technical and administrative functions from time to time and

shall decide all matters regarding the authority of the Board and the delegation thereof.

9. Financial Year

The financial year shall end on the 31st day of March in each year.

10. Budgets

The Chairman shall submit fiscal year program and budget estimates to the Board and to the parties to the Agreement for their approval. Such estimates shall be submitted not later than the first day of August preceding the financial year to which they pertain.

11. Secretariat

(a) There shall be a permanent Secretariat with offices at Regina, Saskatchewan.

(b) The Secretariat shall be the "operational arm" of the Board, charged with the responsibility of conducting programs approved by the Board for collating and analyzing data and reporting the apportionment and water quality of interprovincial streams; for conducting approved studies, and for furthering the policies and objectives of the Board.

(c) Except as otherwise provided for under subsection (f) herein, employees of the Secretariat shall be federal civil servants, subject to federal public service regulations and classification and collective agreements.

(d) The chief officer of the Secretariat shall be the Executive Director whose actions shall at all times be subject to the approval of the Board.

(e) The Board shall approve the establishment of salaried positions within the Secretariat and shall approve job descriptions prior to submission to the appropriate federal authority. The Board shall be consulted on the appointment of employees to the Secretariat which role may be delegated to the Executive Director.

- (f) The Board may arrange by agreement for secondment to the Secretariat, the employees of the agencies of those party to the Agreement, at cost, whenever in the opinion of the party concerned the services of such employees are available. Such employees shall remain under the administrative control and public service regulations of the appropriate party.

12. Assignments to Associated Agencies and Consultants

- (a) The Board shall have the authority to engage agencies of those party to the Agreement, at cost, to undertake assignments from the Board, whenever in the opinion of the party concerned, the services of such agencies are available.
- (b) Agencies may enter into sub-contracts with consultants for purposes of professional interpretation subject to the approval of the Executive Director. Sub-contracts for the collection of basic data shall not require the approval of the Executive Director.
- (c) The Board may engage consultants to undertake assignments from the Board where such services are deemed necessary.
- (d) The services of consultants and of agencies of those party to the Agreement shall be engaged under a contractual arrangement. Contracts shall be entered into by the Chairman and/or the Executive Director subject to delegated authorities under the federal government contract regulations. Contracts for services shall also be subject to budgetary appropriations and any other controls imposed by the Board for the conduct of the work.

13. Terms of Payment for Services Provided by Associated Agencies

- (a) Canada, through the Board, shall reimburse the Provinces of Alberta, Saskatchewan and Manitoba on a monthly basis, for expenditures made pursuant to the Agreement and approved by the Board. Payment for such expenditures will be made by Canada upon the submission of a claim in a mutually agreed manner and form.

- (b) Canada, and the Provinces of Alberta, Saskatchewan and Manitoba shall keep complete records of all expenditures made severally pursuant to the Agreement and shall support such expenditures with proper documentation. Canada and the Provinces of Alberta, Saskatchewan and Manitoba shall make these records and documents available to auditors appointed by the other.

14. Cost of Administration of the Board

- (a) In accordance with Section 10 of Schedule "C", all budgeted expenditures, which shall not include the cost of monitoring, as described in Section 7 of the Master Agreement, but including staff, accommodation, supplies and incidental expenses of the Board, shall be borne by the parties to the Agreement on the basis of one-half by Canada and one-sixth by each of the Provinces.

15. Financing the Operations of the Board

- (a) Canada shall assume responsibility for financing the operations of the Board.
- (b) Subject to the cost sharing provisions of the Agreement, the Provinces of Alberta, Saskatchewan and Manitoba shall pay to Canada their shares of approved expenditures made by Canada for the operations of the Board.
- (c) *On or before July 1st of each year, Canada shall prepare and submit to each of the provinces party to the Agreement, statements of claim respecting provincial shares of monies due Canada for financing the operations of the Board during the previous financial year. Statements of claim shall be certified by a senior official of Canada. Once every three years, commencing with fiscal 1981-82, these claims shall be audited and shall bear a Canada audit certificate. (Amended 1980)*

- (d) Within sixty (60) days after receipt of a claim by Canada, submitted as prescribed in Article 15(c), the Provinces of Alberta, Saskatchewan and Manitoba shall reimburse Canada for their shares of expenditures incurred during the previous financial year for the operations of the Board.

16. Annual Report

Within six (6) months after the end of the financial year, the Chairman shall submit to the Ministers the Annual Report of the Board. (Amended 1980)

17. Amendment of By-Laws

By-Laws may be enacted, amended or repealed by unanimous approval of the Board. "Notice of Motion" to enact, amend or repeal By-Laws must be served on Members at least sixty (60) days prior to a vote on such issue.

18. Rules and Procedures

The Board shall formulate and adopt "Rules and Procedures" governing the day-to-day affairs of the Board and the operations of the Secretariat. These "Rules and Procedures" may be amended, adopted or repealed in accordance with Article 6 of these By-Laws.

PART III

EXECUTIVE DIRECTOR

1. Functions

- (a) The Executive Director shall be the senior employee of the Secretariat; subject to the Board's direction, he shall be responsible for the technical and administrative activities of the Secretariat and the day-to-day management of the Board.
- (b) He shall record or cause to be recorded all votes and minutes of all proceedings in books to be kept for that purpose.
- (c) He shall give or cause to be given notice of all meetings of the Board.
- (d) He shall keep the Board informed at all times of matters pertinent or relevant to the programs and operations of the Board.
- (e) He shall have charge of all records of the Board, together with copies of all reports made by the Board and such other books or papers as the Board may direct.
- (f) He shall implement all orders and resolutions of the Board and perform any other duties that the Board may prescribe.

Approved at PPWB Meeting No. 5
- November 2nd, 1971

*Section 15(c) amended at
PPWB Meeting No. 23 - May 5, 1980.*

*Section 16 amended at
PPWB Meeting No. 24 - Nov. 3, 1980.*

RULES AND PROCEDURES

SECRETARIAT

The Prairie Provinces Water Board hereby adopts the following Rules and Procedures governing the operations of the Prairie Provinces Water Board Secretariat.

Financial Administration

1. The Executive Director is authorized to make disbursements of funds in conformity with the main items of expenditure allotted in the budget estimates approved by the Board, subject to those restrictions specified elsewhere in these Rules and Procedures.
2. The Executive Director shall prepare the annual program and budget estimates for the operations of the Prairie Provinces Water Board. Such estimates shall be submitted to the Chairman not later than the first day of July preceding the financial year to which they pertain.
3. Contracts with private consultant firms and individuals shall conform to accepted practices and procedures of the Federal Treasury Board.
4. A contract for services with a person or persons may be undertaken by the Executive Director providing that no such contract is made with a single person, a single firm of persons, or government agency exceeding \$5,000 without the approval of the Board.
5. Contracts not exceeding \$5,000 shall be executed on behalf of the Board under the signature of the Executive Director. Contracts exceeding \$5,000 shall be executed under the signature of the Chairman of the Board.
6. Payment of accounts will be made only after they have been approved by the Executive Director.

Establishment of Salaried Positions, Appointments and Administration of Salaries

7. The establishment of salaried positions in the Secretariat shall be approved by the Board.
8. The Board shall approve the duties of all positions in the Secretariat including those of Executor Director.
9. The classification and remuneration of salaried positions within the Secretariat shall be governed by the appropriate federal authority.
10. The financial and personnel administration of the Secretariat shall be carried out in accordance with federal government practices.
11. To facilitate the operations of the Secretariat, personnel and financial administrative support services shall be provided, at cost, by the Federal Department of the Environment.

Board Offices

12. The Executive Director is authorized to lease and maintain property within which to conduct Board affairs providing that terms of such leasing shall be sanctioned by the Board.
13. Costs for the operation of the Board offices shall include, but shall not necessarily be limited to, expenditures for the following items:
 - (a) Salaries and wages and related benefits of Board employees or personnel seconded to the Board offices, including removal expenses, both at the commencement and termination of the appointment, where applicable, and living expenses for seconded personnel where approved by the Board.

- (b) Field surveys and investigations including travel and living expenses when applicable, by personnel engaged in conducting studies or field investigations.
- (c) Rentals for office space and equipment and charges for utilities and related services for the operation of Board offices.
- (d) Purchases of furniture, and equipment not available on a rental basis.
- (e) Operating, maintenance and transportation expenses for equipment.
- (f) Contracts awarded by the Board including, where applicable, arbitration, settlements, legal fees and other matters, made in accordance with the provisions of the contract.
- (g) Settlement and legal fees arising out of property damaged or public liability made or incurred by an employee of the Secretariat or a party to the Agreement working for the Secretariat and engaged in the activities of the Board offices.
- (h) Other items required for conducting the work and for operations of the Board offices which have been approved by the Board.
- (c) Normal operating maintenance and transportation expenses for equipment where such expenses are not included in the rental rate.
- (d) All contracts as provided under the provisions of Article 12(b) of the By-Laws.
- (e) Other items required for conducting the work of the Board and approved by the Executive Director.

Board Members, Alternates and Advisory Committees

15. The costs incurred by Board Members and their Alternates in representing their respective governments at Board functions shall be paid for by the appropriate government. The salaries and travelling expenses of government officials appointed to represent those party to the Agreement on Committees established to advise the Board and/or the Executive Director shall be paid by the appropriate party.

Approved at PPWB Meeting No. 5
- November 2nd, 1971

Payment for Services Provided by Participating Government Agencies

14. Costs of participating government agencies for services, field investigations, planning studies, etc., specifically requested by the Board shall include the following items:
 - (a) Salaries, wages, travel and living expenses for employees engaged in providing the service.
 - (b) Rental charges for equipment and operators.

APPENDIX 3

MAP



