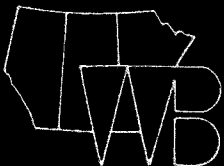


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ANNUAL REPORT

FOR THE YEAR ENDING MARCH 31, 1987



PRAIRIE PROVINCES WATER BOARD

CANADA ALBERTA SASKATCHEWAN MANITOBA

1986-87

ANNUAL REPORT

FOR THE YEAR ENDING MARCH 31, 1987



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 in the last fiscal year; on April 29, 1986 in Calgary, Alberta and on December 9-10, 1986 in Saskatoon, Saskatchewan. There were no changes in Board membership in the last fiscal year.

In the last fiscal year; the Committee on Hydrology met three times, the Committee on Water Quality met four times, and the Committee on Groundwater met twice; 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, 1986 to March 31, 1987.

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 44, now operates through an Executive Director and his staff, supported by four 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 and have no working connection with any part of the Federal Government. 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

Several administrative decisions were made by the Prairie Provinces Water Board in the current fiscal year. They are listed below.

Interprovincial Implications of Proposed Projects

The Board has agreed that a statement of the impact that a major project would have on the quality and quantity of water crossing interprovincial boundaries should be submitted to the appropriate provincial members and reviewed by the Secretariat in consultation with Board Committees. The Board, in the past fiscal year, has been active in the consideration of two such projects.

1) The Cold Lake Oil Sands Project.

The Committees on Hydrology, Water Quality and Groundwater have maintained a watching brief on the development of the Cold Lake Oil Sands Project keeping the Board apprised of any plans that might affect the quantity and/or quality of water crossing the Alberta-Saskatchewan boundary.

Groundwater monitoring is not covered under the Master Agreement and the Board agreed that they should not become involved in a continuing groundwater monitoring program, but the COG should, however, continue to monitor studies in the Cold Lake area, informing the Board of any present or future interprovincial groundwater concerns.

2) Three Rivers Damsite

Work is progressing at the Three Rivers damsite. The Board has not, as yet, received a formal report on the interprovincial environmental considerations pertinent to this project but, in previous reviews of proposed damsites in the Upper Oldman River basin, the Committee on Hydrology was assured that the operation of these storages will have no adverse interprovincial effects.

Site Specific Water Quality Studies

The eleven Proposed PPWB Site Specific Water Quality Indicator Documents were tabled by the Board at Meeting #37 for information purposes. The Board Members agreed to distribute the reports to their Member Agencies for review purposes, and directed the Committee on Water Quality to prepare a "Fact Sheet" showing how the Water Quality Indicators may be used.

Supporting Documentation for Proposed Site Specific Water Quality Indicators

The Board agreed to hire a contractor, at a cost not to exceed \$50 000, to prepare supporting documentation for the following five inter-provincial water quality sites; South Saskatchewan, Red Deer, North Saskatchewan, Battle and Saskatchewan Rivers.

Water Quantity and Water Quality Monitoring Programs for 1987-88

The Proposed Hydrometric Monitoring Program for 1987-88, as recommended by the Committee on Hydrology, was approved, and the Board Members noted that the Committee on Hydrology should keep current a listing of the hydrometric stations needed to monitor small interprovincial streams for apportionment purposes if monitoring of apportionment was implemented. The Committee would then be able to inform the Board of the stations that would be required, if, following an annual review, it was decided to implement monitoring on any one of the minor basins.

With regard to who should be responsible for monitoring individual irrigation projects and return flows, in Boxelder Creek, the Board suggested that Alberta and Saskatchewan jointly establish a plan to develop this monitoring capability. Alberta agreed to take the lead role in resolving this situation.

The 1987-88 PPWB Water Quality Monitoring Program as proposed by the COWQ was also accepted.

Establishing a Water Quality Monitoring Sub-Committee

The Board agreed, at Meeting #37, that the Committee on Water Quality should form a Water Quality Monitoring Sub-Committee with a Chairman from the Water Quality Branch of Environment Canada. This sub-committee is directed to review the existing PPWB water quality monitoring program and to recommend to the COWQ an improved monitoring program. In doing this, the group will also review the Long Term First Order Water Quality Monitoring Network to ascertain which of the interprovincial stations are of direct interest to the Board.

Report on "Moosomin Dam and Its Effect on the Apportionment of Pipestone Creek Flows"

The report entitled "Moosomin Dam and Its Effect on The Apportionment of Pipestone Creek Flows" (PPWB Report No. 76) was accepted by the Board at Meeting #36. It was agreed that Manitoba and Saskatchewan would meet to define operational procedures for Moosomin Dam that would both be acceptable to Saskatchewan and meet Manitoba's requirements for equitable apportionment of Pipestone Creek. The Board Members have agreed that no further decision on apportionment of Pipestone Creek should be made until PFRA and Saskatchewan have come to a final agreement on the acceptable operational procedure for Moosomin Dam.

Scheduled Meetings With Board Committees

The Board met with the Committee on Water Quality at Meeting

#37 on December 10, 1986. They agreed to meet with the Committee on Groundwater in the fall of 1987, the Committee on Hydrology in the fall of 1988 and the Committee on Water Quality in the fall of 1989. The same meeting sequence will be repeated in the fall of subsequent years.

PPWB Report #65 - "Westward Flowing Tributaries of Eastward Flowing Streams Apportionment Study"

The Board approved the above report, as revised by the Committee on Hydrology, at Meeting #36.

PPWB Report #83 - "A Summary of Prairie Provinces Water Board Committee on Hydrology Activities from 1972 to 1985"

The above report was accepted by the Board, for information purposes, at Meeting #37.

Reporting of Spills to the Board

The PPWB Interprovincial Water Quality Contingency Plan, as printed in January 1986, was approved and it was agreed that it is not necessary for the Secretariat to contact Board Members directly about spill events as the Board Members will rely on their own Provincial Agencies for that information. The Secretariat was directed to report briefly to each Board Meeting, documenting spills that had potential interprovincial water quality implications and/or were of high public concern.

Committee on Interjurisdictional Agreements Administration

The Board agreed to dismantle the Committee on Interjurisdictional Agreements Administration (COIAA), noting that the Committee has not met since February 15, 1984 and that no additional Committee assignments are planned for the near future. The Board expressed their sincere appreciation for the work of the Committee Members in the past several years.

Distribution Policy for Future Board Reports

The Board agreed, at Meeting #36, that each Member Agency on the Board will receive five free copies of future Board reports. When a report is presented to the Board the authors will also supply a suggested list of people and agencies that should receive free copies. That list will be reviewed by the Board on a case-by-case basis. Each Board Member also agreed to review the proposed free distribution list for the groundwater profile along the Saskatchewan-Manitoba boundary and to submit a list to the Secretariat showing the agencies that should receive a free copy of this report.

The Board agreed that, after the report entitled "Hydrogeologic Profile - Saskatchewan-Manitoba boundary" has been distributed to Member Agencies. All other people, or agencies requesting the report will be informed that a copy may be made available through their Board Member. If they require a personal copy, it may be purchased from the Secretariat at the cost of \$20.00 per copy.

Responsibility for Groundwater Water Quality

The Board agreed that any interprovincial problem related to groundwater quality in the Prairie Provinces should be identified and dealt with by the COG, with the COWQ providing technical support.

Standardized Wind Design Data for the Prairie Provinces

A proposal to produce a standardized set of design wind data for the provinces was presented to the Board by the COH. The Board agreed that the Atmospheric Environment Service, Regina, Saskatchewan should proceed with Phase I of the study to develop a data base and analysis program for design wind data in the prairie provinces at a cost not to exceed \$5 020.

Proposed Prairie Hydrology Workshop

The Board agreed that the Committee on Hydrology should proceed with the preliminary planning of a Prairie Hydrology Workshop to be held in 1988.

Resignation of the Executive Director

The Board accepted Mr. Godwin's letter of November 22, 1986 announcing his intention to retire effective July 31, 1987 and the Members agreed that a new Executive Director will be hired by open competition with advertisements being placed in major western daily newspapers and in the Toronto Globe and Mail.

PPWB Budget for 1987-88

The Board approved a budget of \$449 500 for the fiscal year 1987-88. In accepting this budget, the Board Members agreed to enter into a contract with an individual to provide specific services to the Secretariat in the fiscal year 1987-88 for a sum not to exceed \$28 200. This contract will allow the Secretariat to retain the level of service previously provided by the Secretariat's Computation Technician. The 1987-88 budget amount also includes \$50 000 for a contract to prepare five supporting documents for the Proposed Site Specific Water Quality Indicators.

BOARD STUDIES

The Secretariat, under the direction of the Board and with the cooperation of several Board committees, is involved in several ongoing studies. The progress made on these studies in the fiscal year 1986-87 is described in this section.

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

A contract was awarded to Geoscience Consulting Ltd. of Edmonton to develop a Hydrogeologic Profile along the Alberta-Saskatchewan boundary from the International boundary to the northern edge of the Saskatchewan-Nelson Basin. The contractor's report was reviewed, printed and circulated by the PPWB in September, 1985.

Geoscience was awarded a similar contract to develop a Hydrogeologic Profile along the Saskatchewan-Manitoba boundary from the International boundary to the northern edge of the Saskatchewan-Nelson Basin. The contract was completed in September 1985, and the report was published by the Secretariat, after review by the Committee on Groundwater, in July 1986.

Based on the information contained in the above reports and on additional information provided by provincial COG members, the Committee on Groundwater will prepare a report to the Board documenting sites that are or might become interprovincial groundwater problem areas.

Site Specific Water Quality Indicators Study

The Committee on Water Quality has, at the end of the fiscal year 1986-87 prepared draft reports defining water quality indicators for each of the eleven interprovincial sites shown on the map on pages 66 and 67. The Secretariat, with the cooperation of the Committee on Water Quality, has also developed a procedure to check the equitability of these water quality indicators at each site. This procedure is being used for all parameters at all eleven sites. Based on the tests the indicators, as developed, should be technically appropriate for each site.

Preparation of Supporting Documents for the Proposed Site Specific Water Quality Indicators

Proposed Site Specific Indicators for each of the eleven PPWB

Water Quality sites were tabled by the Board at Meeting #37. The Board will have their member agencies review these indicators to ascertain their appropriateness from a provincial and a federal viewpoint. To do this, the agencies will need supporting documentation for each of the eleven stations. Documentation of the Beaver River station has been completed and the Secretariat is directed by the Board to obtain a contractor to prepare similar documentation for the next five sites; South Saskatchewan, Red Deer, North Saskatchewan, Battle, and Saskatchewan River at the interprovincial boundaries.

The Impact of Drainage on Downstream Watersheds

The Board accepted a specific reference from the Provinces of Saskatchewan and Manitoba to deal with a problem involving artificial drainage in a series of small eastward-flowing interprovincial streams that affect the Rural Municipalities of Churchbridge, Langenburg, Shellmouth and Russell. A Task Force consisting of the Executive Director of the Secretariat and one member each from Saskatchewan and Manitoba has been formed. A report summarizing the effect of existing drainage works on the volume and intensity of flow at the affected boundary points and the potential effect that future drainage might have on these same streams has been prepared and a report on the effect that these changes in flow will have on downstream areas in Manitoba has been completed. Both reports were reviewed by the Task Force at a meeting on February 27, 1987. They prepared a report on their findings for the attention of the Committee on Hydrology. The COH approved that report in March, 1987 and forwarded it to the Board for their consideration.

Monitoring Studies

In the fiscal year 1985-86, the Federal Water Resources Branch in Calgary completed a study of "Irrigation Return Flow From Irrigation - Southern Alberta" and incorporated the information into an updated model describing the natural flow of the South Saskatchewan River at the Alberta-Saskatchewan boundary. The natural flow report was submitted to the Board in the Spring of 1986, and was accepted and the revised methodology is now used to calculate natural streamflow on the South Saskatchewan River at the Alberta-Saskatchewan boundary.

Updating of PPWB Monthly Natural Streamflow Estimates

The Board has agreed that the Secretariat will assume the responsibility of updating the Saskatchewan-Nelson basin monthly natural streamflow estimates. The Secretariat has been instructed to bring the monthly streamflow files up to date as soon as practical and to ensure that they are updated annually.

Alberta Environment has updated streamflow in the South Saskatchewan River basin in Alberta to the end of 1982. This data has been added to the PPWB computerized data base and the Secretariat is updating the remaining monthly natural streamflow records for the Saskatchewan-Nelson Basin. The updating procedure, in subsequent years, will be a continuing process.

Water Quality Task Force

The Board, in fiscal year 1980-81, approved terms of reference for the Task Force on Water Quality Methodology. This Task Force, functioning under the direction of the Committee on Water Quality, reported to the Board in that fiscal year. Test samples have been circulated on a monthly basis, by the Inland Water Directorate of Environment Canada, since September 1982 to the three provincial and five federal laboratories involved with the Prairie Provinces Water Board. It was agreed that preparation of a Task Force report would be postponed until the 1987-88 fiscal year because of other higher priority work of the Secretariat.

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 that fell into this category was prepared and the Board agreed that the speed with which the studies were completed would depend on the availability of participating agencies.

Studies have now been completed on 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. The Saskatchewan Water Corporation has completed a first draft of a natural flow study of Birch (Saskeram) River and the COH is now reviewing that report. PFRA has contracted to complete natural flow studies in 1987 on Overflowing River and Red Deer River (Saskatchewan). The PPWB Secretariat has prepared a first draft of reports on Gopher Creek, Bosshill Creek, Jackson Creek and Stony Creek. Only Elm Creek is now left from the list of studies initially selected for study.

The Committee on Hydrology has also agreed that a second report should be made on the natural flow of Pipestone Creek defining a more accurate method of calculating natural flow. The report can not be prepared, however, until Canada Water Resources Branch has gathered some years of record on the new hydrometric stations established on Pipestone Creek.

Groundwater Bibliography

The Committee on Groundwater has agreed to establish and maintain a bibliography of groundwater reports pertinent to interprovincial groundwater considerations. This continuing project utilizes the WATDOC facility in Ottawa to store report listings. No firm date has been set for completion of this study. The work will be done as time permits.

Westward Flowing Tributaries of Eastward Flowing Streams

The Board, in previous meetings, agreed to take no action on the Committee on Hydrology's report entitled "Westward Flowing Tributaries of Eastward Flowing Streams-Apportionment Study" PPWB Report #65 until the provinces involved have completed their assessments of the report's implications. The Board approved a revised version of the above report at Meeting #36 on April 29, 1986.

Pipestone Creek Studies

The Board Secretariat and the Committee on Hydrology have been involved in studies on Pipestone Creek in connection with the distribution of streamflow at the Saskatchewan-Manitoba boundary. As a result of these studies, the Committee on Hydrology has recommended and the Board has approved the establishment of an additional monitoring site on Pipestone Creek above Moosomin Reservoir, and the Secretariat has prepared a report describing the physical effect that Moosomin Reservoir storage would have on streamflow at the Saskatchewan-Manitoba boundary.

Water Demand Study Update

The Secretariat produced a preliminary draft format for a report to update the PPWB Water Demand Study Data. The Board directed the Secretariat to submit a detailed proposal to the Spring, 1987 Board Meeting describing both the administrative and financial commitments that would be required to produce the updated report.

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 four Board committees in fiscal year 1986-87.

Committee on Hydrology

The Committee on Hydrology met three times in the last fiscal year; on April 8-9, 1986 in Winnipeg, Manitoba; on September 30th and October 1, 1986 in Calgary, Alberta and on March 24-25, 1987 in Regina, Saskatchewan. At the Winnipeg meeting, they reviewed a study proposal prepared by Mr. Hopkinson of Atmospheric Environment Services (AES) regarding the production of design wind data for designated meteorological monitoring sites in the three Prairie Provinces. The committee agreed that the related benefits from design wind data would be significant to all three Prairie Provinces and that the Secretariat should propose to the Board that Phase I of the project should be conducted by the AES, Regina office in fiscal year 1986-87 for \$5 020, with Phase II of the project, if required, being completed when funds are available. The Board approved the study. The report was completed in December 1986 and was published as "Design Wind Study - Phase I" - PPWB Report #90. The Members discussed the report and agreed that the information is very useful. They also agreed to consult with their technical staff to see if the Phase II portion of the study is needed immediately.

The committee reviewed work progress on the Langenburg-Russell Drainage Study at each of the three meetings. At the March 1987 Meeting, they reviewed a report prepared by the Task Force on Interprovincial Drainage entitled "Interprovincial Drainage Affecting the Rural Municipalities of Churchbridge and Langenburg in Saskatchewan and Shellmouth and Russell in Manitoba". The Committee accepted that report and agreed that it should be submitted to the Board at its meeting on May 5, 1987.

The final draft of the report entitled "A Summary of Prairie Provinces Water Board Committee on Hydrology from 1972 to 1985" - PPWB Report #83 was reviewed and the Committee approved the report at the Calgary meeting in September 1986. It was submitted to the Board, for their approval at the December 1986 Meeting.

The Committee Members, at the March 1987 Meeting, approved the final version of a report, prepared by the Secretariat, entitled "Handbook

for Administration of the Apportionment Agreement", and agreed that it should be submitted to the Board for information purposes.

Mr. Hopkinson of AES, Regina office, provided the members with a rough draft of a report entitled "An Attempt to Determine Evaporation at Middle Creek Reservoir" outlining the preliminary results of that study. The Committee discussed the study approach with Mr. Hopkinson, and agreed that the Committee should reserve further comment until a complete draft of the report has been submitted.

The Committee reviewed an interim procedure developed by the Pipestone Creek Sub-Committee for computing monthly natural flow of Pipestone Creek at the Saskatchewan-Manitoba boundary. The Committee agreed that more specific written notes on the calculation form are required to describe how the calculations are made and suggested that an example should be given to clarify the computation procedure. Some concern was expressed about the ability of the Canada Water Resources Branch to produce usable flow measurements at the PPWB station "Pipestone Creek above Moosomin Reservoir". The Committee agreed that a field investigation should be made in the Spring of 1987 to evaluate the monitoring site and to identify alternative sites.

In respect to the PPWB hydrometric monitoring station list, the Committee agreed on the hydrometric stations that will be required for apportionment purposes in fiscal year 1987-88.

The Environment Canada Member of the COH submitted a report to the PPWB entitled "Natural Flow Procedures and Hydrometric Networks - A Handbook for Small Interprovincial Streams", PPWB Report #80. The handbook containing a listing of the hydrometric stations that would be needed if monitoring for apportionment was implemented on these interprovincial streams. The handbook was reviewed and accepted by the Committee and circulated to the Board.

The Committee completed its review of the first draft of the report entitled "Birch River at Saskatchewan-Manitoba Boundary - Natural Flow" prepared by the Saskatchewan Water Corporation, and discussed the progress of natural flow studies for the Red Deer River (Saskatchewan), Overflowing River, Gopher Creek, Bosshill Creek, Jackson Creek and Stony Creek.

Committee on Water Quality

The Committee on Water Quality met four times in the past fiscal year. Meetings were held on May 21-22, 1986 in Winnipeg, Manitoba; on September 24-26, 1986 in Edmonton, Alberta; on December 10-11, 1986 in Saskatoon, Saskatchewan and on March 30-31, 1987 in Winnipeg, Manitoba.

The committee updated the PPWB Water Quality Contingency Plan and reviewed concerns regarding several spills on the North and South Saskatchewan Rivers. They noted that the agencies involved were appropriately using the Contingency Plan to inform downstream agencies of all such occurrences.

The definition of a spill and the reporting of such spills under the PPWB Interprovincial Water Quality Contingency Plan was reviewed. A spill was defined as "the discharge of any pollutant or the identification of any unusual water quality condition within the prairie provinces that has potential interprovincial impacts and/or is of high public interprovincial concern". The Committee noted the Secretariat will routinely report these spills at each Board Meeting as directed by the Board. A letter defining what was a spill situation under the Interprovincial Water Quality Contingency Plan was prepared and sent to the Board.

The Committee reviewed the Proposed Terms of Reference for the PPWB Water Quality Monitoring Task Force and directed the Task Force to identify agencies' commitments and to develop a work plan, based on time and funding restraints, to accomplish the tasks defined in their Terms of Reference.

Proposed Site Specific Water Quality Indicators for all eleven PPWB monitoring sites were formally approved at the Committee level. These proposed indicators were forwarded to the Board for detailed agency review at the Fall 1986 Board Meeting.

A document entitled "Proposed Site Specific Water Quality Indicators - Proposed Steps Towards Formalizing Their Use" was reviewed, and modified. An amended version was distributed to PPWB Members. The Committee also initiated the preparation of a "Fact Sheet" describing how the Water Quality Indicators may be used. This Fact Sheet will be presented to the Board at its May 1987 Meeting.

The Committee reviewed, and accepted, the report prepared by the Water Quality Branch, Inland Waters Directorate, Western & Northern Region, Environment Canada, entitled "Water Quality Indicators for the Beaver River - Supporting Documentation" - PPWB Report No. 91A. It was agreed that a similar format would be used in supporting documents for the remaining ten PPWB monitoring sites.

A priority list was established for the preparation of the remaining ten Water Quality Indicator Supporting Documents, and it was noted that the Board has agreed to provide \$50 000 to let a contract, for Chapter 5 of the first five supporting documents. Chapters 1 to 4 and Appendix A of the first five documents will be prepared by the Secretariat and Appendix B of each document will be produced by Environment Canada.

The Committee agreed to a PPWB Water Quality Monitoring program for 1987-88. This program will be basically the same as the program conducted in 1986-87. Minor changes may be made to streamline and improve the monitoring network during the fiscal year, but the total monitoring program cost will not exceed cost attributed to the 1986-87 program.

Committee on Groundwater

The Committee on Groundwater met twice in the last fiscal year. The meetings were held on June 3, 1986 in Regina, Saskatchewan and on

January 14, 1987 in Edmonton, Alberta. They reviewed the work progress of each Board agency in the preparation of groundwater bibliographies to be entered into the WATDOC system, and agreed that documenting groundwater reports in the Prairie Provinces for entering into WATDOC should be classed as a job that they will complete when time, staff and finances become available.

The committee noted that, with the publication of hydrogeologic profiles along the Alberta-Saskatchewan and Saskatchewan-Manitoba boundaries, potential groundwater concerns or monitoring needs at the interprovincial boundaries may be identified based on the two reports. They agreed that Alberta, Saskatchewan and Manitoba COG Members would, based on the information contained in the two reports, identify potential interprovincial groundwater concerns and related monitoring needs along both boundaries. The COG is now reviewing all groundwater projects within 20 kilometres of the interprovincial boundary prior to preparation of a draft report outlining groundwater concerns along the two interprovincial boundaries.

The concept of the "Theoretical 20-year well yield (Q20)" as used in overlay sheets for the hydrogeologic profile along the Alberta-Saskatchewan boundary was discussed with Mr. Tokarsky, the contractor. The Committee agreed that the Q20 value is a reliable estimate of long-term well yield. They also agreed that theoretical 20-year well yield values would be calculated and recorded on the overlay sheets for the hydrogeologic profile along the Saskatchewan-Manitoba Boundary.

There has been a concern about the possible duplication in pesticide studies that have been conducted in Canada. The Committee concluded that there appears to be no duplication in pesticide studies being done by provincial and federal agencies. Furthermore, with the National Hydrology Research Institute (NHRI) being located in Saskatoon, future duplication will probably be avoided as future federal work will be coordinated with provincial agencies to maximize coverage and results.

Committee on Interjurisdictional Agreements Administration

The Committee on Interjurisdictional Agreements Administration has not met since February 15, 1984. The Board agreed, at Meeting #37, to dismantle the committee as no additional committee assignments are planned for the immediate future. The Board Members, at Meeting #37, expressed their sincere appreciation for the work of the committee in past years.

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 Regional Office of the Inland Waters/Lands, Environmental 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/Lands Directorate of the Environmental Conservation and Protection of Environment Canada.

There were no staff changes during the past fiscal year. The Secretariat hired a contractor, Mr. K.F. Born, from April 1986 to March 1987 to do the drafting and report preparation work required for Board purposes.

Reports

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

- PPWB Report No. 65 - Westward Flowing Tributaries of Eastward Flowing Streams Apportionment Study. May 1986 (Prepared by the Committee on Hydrology for the Prairie Provinces Water Board.
- PPWB Report No. 76 - Moosomin Dam and Its Effect on the Apportionment of Pipestone Creek Flows. October 1985 (Prepared by the PPWB Secretariat). Accepted by the Board in May 1986.
- PPWB Report No. 79 - Hydrogeologic Profile Saskatchewan-Manitoba Boundary. July 1986 (Prepared by O. Tokarsky, Geoscience Consulting Ltd. for Prairie Provinces Water Board.
- PPWB Report No. 80 - Natural Flow Procedures and Hydrometric Networks- A Handbook for Small Interprovincial Streams, March 1986 (Prepared by Environment Canada, Water Resources Branch, Calgary office). Accepted by the Board in May 1986.
- PPWB Report No. 83 - A Summary of Prairie Provinces Water Board Committee on Hydrology Activities from 1972 to 1985. November 1986 (Prepared by the PPWB Secretariat for the Prairie Provinces Water Board).

- PPWB Report No. 90 - Design Wind Study (Phase I) for the Prairie Provinces Water Board. December 1986 (Prepared by Atmospheric Environment Service, Environment Canada).

Information

The work of the Secretariat is primarily connected with the apportionment of streamflow and with Committee and Board studies. These activities are reported under other sections in this report and will not be repeated in this section.

Several spills occurred on the South Saskatchewan River and the North Saskatchewan River in the last fiscal year. Member Agencies were kept informed, through the PPWB Interprovincial Water Quality Contingency Plan, of the action taken in connection with these spills.

A summer student was hired to update the PPWB Water Demand basic data tables and the updating process was completed for most consumptive uses to the end of 1984. This basic data is available from the Board upon request, and the PPWB Water Demand data file has been accessed several times in the past year to obtain basic water use information.

A temporary employee was seconded from the Saskatchewan Water Corporation to work in the PPWB Secretariat office from October 6, 1986 to February 27, 1987. He was used, under the direction of the Computer Technician, to tabulate municipal water use in the South Saskatchewan and Missouri River Basins in Saskatchewan and to enter these uses into the PPWB data base. It is anticipated that this information will be used as part of the South Saskatchewan River Study currently underway.

The report entitled "Hydrogeologic Profile - Alberta-Saskatchewan Boundary - PPWB Report #78" was printed and distributed in September 1985. The drafting contractor, in the past year, has prepared mylar overlays showing additional details of the wells and test holes used to create profiles for this report. Copies of these overlays have been forwarded to Member Agencies for their use and subsequent duplication. A similar document entitled "Hydrogeologic Profile - Saskatchewan-Manitoba Boundary" - PPWB Report #79 was completed in July 1986 and distributed to interested users. The drafting contractor is now preparing similar overlays to be used with PPWB Report #79. When these have been completed they will also be distributed to Member Agencies.

The Secretariat has stripped and revised all correspondence files up to January 1985. No action has as yet been taken to microfiche these historic files, although, this is planned in the future.

The Secretariat in 1986 completed reports on Proposed Site Specific Water Quality Indicators for each of the eleven PPWB Water Quality Monitoring sites and submitted them to the Board at Meeting No. 37 held in December 1986. The Supporting Documentation required for provincial agency review is now being prepared. The Secretariat has spent considerable time helping the contractor to complete the preparation of a Supporting Document for the Beaver River and anticipates similar work in connection with the remaining ten supporting documents that will be produced with the help of private contractors.

The work of the Board was publicized on several occasions in the last year. The Executive Director presented four lectures and three formal papers describing interprovincial water apportionment under drought conditions, and the work of the Prairie Provinces Water Board.

On September 3-4, 1986, the Executive Director made a field trip to the area lying south of Moosomin and Virden to investigate field conditions on four small interprovincial creeks (Bosshill, Gopher, Stony and Jackson Creeks). These are being evaluated as part of natural flow studies for the four interprovincial basins.

The Computer Technician and the Contractor spent considerable time during the summer of 1986 preparing the PPWB Water Quality Annual Report. This work included the abstraction of information from NAQUADAT files, collocation of that data into a PPWB format, and subsequently printing the results in a form that would fit the annual report format.

The Operations Engineer completed the report entitled "A Summary of PPWB Committee on Hydrology Activities from 1972 to 1985" and that report was submitted and accepted by the Prairie Provinces Water Board at Meeting No. 37. The final draft of a second report entitled "Handbook for Administration of Apportionment Agreement" has also been prepared and will be submitted to the Prairie Provinces Water Board at their Spring Meeting in May 1987.

Some time was also spent computing monthly natural flows for Pipestone Creek at the boundary and revising the computational procedures for the computation of natural flow in that basin.

Financial

Final claims for the fiscal years 1985-86 and 1986-87 are as shown on page 43. They indicate a total expenditure of \$414 979 in the 1986-87 fiscal year of which \$234 770 was for salaries. Revenue of \$277 was derived from the sale of PPWB reports leaving a net expenditure of \$414 702. Final claims for these two years and the 1987-88 fiscal year will be audited in 1988. The audited accounts of the Prairie Provinces Water Board for the fiscal years 1982-83, 1983-84, and 1984-85 are shown on page 42. The cost of Board operations for the past several years may be checked using these statements.

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 agreement and ratified by this 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 in the fiscal year 1986-87 and that list was approved by the Board.

Quarterly Reports on natural flows, consumptive uses, and storage changes for the South Saskatchewan River Basin in Alberta and the Qu'Appelle River Basin in Saskatchewan, were prepared and distributed on a regular basis. The accumulated total annual recorded flow of 7 638 000 cubic decametres in the South Saskatchewan River below its junction with the Red Deer River is 79.7% of the total annual natural flow of 9 585 000 cubic decametres. Recorded discharge of the South Saskatchewan River at the apportionment point did not fall below 42.5 cubic metres per second or one-half of natural flow at any time during 1986, so the minimum flow criteria were met for the complete apportionment period. A summary of recorded and natural flows for 1986 at this site is shown on pages 28 and 29.

The natural flow of the Qu'Appelle River from April 1, 1986 to March 31, 1987 was 112 700 cubic decametres. Recorded flow, augmented by releases of 96 100 cubic decametres from Lake Diefenbaker was 108 300 cubic decametres, 96% of natural flow. Recorded and natural flows covering the apportionment period of April 1986 to March 1987 are shown on page 31.

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 specific basins. The SSARR model has been reviewed by a Sub-committee of the Committee on Hydrology, and the project depletion method has been updated by Environment Canada, Water

Resources Branch staff. Following these reviews, changes have been made to the calculations procedure used for both streams.

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 30 and 31. Recorded flows for five additional boundary sites are also listed on the same two pages.

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 26. These water quality monitoring stations correspond with the interprovincial hydrometric locations mapped on the last pages of this report. The monitoring program for 1986-87 has been reviewed by the Committee on Water Quality 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 stations from April 1974 to December 31, 1985 has been validated and published in the 1987 PPWB Annual Water Quality Report.

Data from the PPWB monitoring stations is collected to define water quality characteristics of rivers crossing interprovincial boundaries and to estimate 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 26. The Board, through the Secretariat, continually reviews Water Quality data from all eleven PPWB stations to identify present and potential water quality concerns. When the proposed site specific water quality indicators have been approved by the Board they will be used for review purposes. Until that time annual evaluations will be based on the 1973 objectives although the Board realizes that some may not be appropriate for prairie streams.

A review of the 1986 water quality data from PPWB monitoring stations indicates that the Water Quality Objectives were exceeded at least once at each site, with the exception of the Churchill River site, for one or more parameters. The PPWB station with the highest frequency of exceeded objectives was the Assiniboine River below Kamsack station, followed by the Battle River near Unwin and the Carrot River near Turnberry station.

The minimum dissolved oxygen level of 5.0 mg/L was maintained at most PPWB sites, but dissolved oxygen levels in the Red Deer River near Enwood, the Carrot River, the Battle River, North Saskatchewan River and the Beaver River at the interprovincial boundary dropped below this minimum level during the winter period. The objective for manganese was exceeded at 5 to 11 PPWB stations (30 times in the past year). The objective for total phosphorus as P was exceeded at 9 of the 11 PPWB stations (72 times during 1986). The total nitrogen objective was exceeded 80 times in the last year at 9 of the 11 PPWB sites. The Churchill River at the outlet of Wasawakasik Lake PPWB monitoring site was the only PPWB station that experienced relatively low nutrient levels.

The Water Quality Objective for phenolic material (0.005 mg/L) was exceeded once at four PPWB stations in 1986. This is a significant decrease over 1985 when the phenolic material requirement was exceeded a total of 26 times at 10 PPWB stations.

Persistent insecticides such as DDT, aldrin, dieldrin, endrin and heptachlor were not present, at detectable levels, at any of the eleven PPWB water quality monitoring stations in 1986. MCPA was however, detected once in the Qu'Appelle River in the 1986 year.

Several herbicides were detected at PPWB Water Quality monitoring stations in 1986. Alpha BHC, 2, 4-D and lindane were present in many of the samples collected in 1986.

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 stream-flow 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". The information in these reports will be used in future years to administer the 1969 Apportionment Agreement.

The computer programs used to calculate natural flow of the North Saskatchewan, Saskatchewan and Churchill rivers have been revised by the Secretariat so they may be processed more effectively by the Secretariat's IBM-PC computer and the SASKCOMP computer using data received from Federal Water Resources Branch.

Irrigation water uses in the Boxelder Creek Basin were reported to the Secretariat in 1986 by the provinces of Alberta and Saskatchewan respectively. An updated listing of all licenced water uses and the actual water uses in 1986 were reported to the Board after completion of the 1986 water use season.

PPWB WATER QUALITY MONITORING
1986 PARAMETER LIST

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

Collected at 5 sites only

* 1973 PPWB Objectives

° 1979 Interim PPWB Requirements for the Beaver River

** Report only if detected

°/° Collected at 8 sites only during open water period

1986 FLOW DATA



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

FOR THE YEAR 1986

SOUTH SASKATCHEWAN RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	256 000	194 000	651 000	399 000	591 000	1 350 000	408 000	179 000	167 000	522 000	274 000	313 000	5 264 000
CONSUMPTIVE USE	1 480	5 260	4 490	94 210	288 470	491 660	449 110	364 880	200 800	9 410	0	410	1 910 180
CHANGE IN STORAGE	-76 340	-51 620	-71 380	-35 640	138 570	200 330	37 940	-38 620	30	43 330	-32 470	-112 150	1 980
DIVERSION FROM BASIN	0	0	0	0	14 020	35 730	46 600	35 510	32 280	18 170	3 060	0	185 370
NATURAL FLOW ALTA. BDRY.	171 240	138 920	595 150	362 790	937 200	2 131 580	953 600	538 210	436 260	624 160	263 240	211 330	7 363 680

RED DEER RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	41 500	32 300	141 000	95 800	269 000	338 000	516 000	277 000	201 000	339 000	81 100	47 600	2 373 300
CONSUMPTIVE USE	0	0	0	470	1 850	3 190	500	4 490	860	50	0	0	11 410
CHANGE IN STORAGE	-20 950	-20 050	-570	1 620	44 070	1 060	12 530	11 860	-12 170	15 120	-1 700	-6 800	23 920
DIVERSION INTO BASIN	0	0	0	0	-14 020	-35 730	-46 600	-35 510	-32 280	-18 170	-3 060	0	-185 370
NATURAL FLOW ALTA. BDRY.	21 610	9 750	137 750	94 620	302 370	302 290	486 850	260 920	163 530	323 280	77 350	40 320	2 220 640

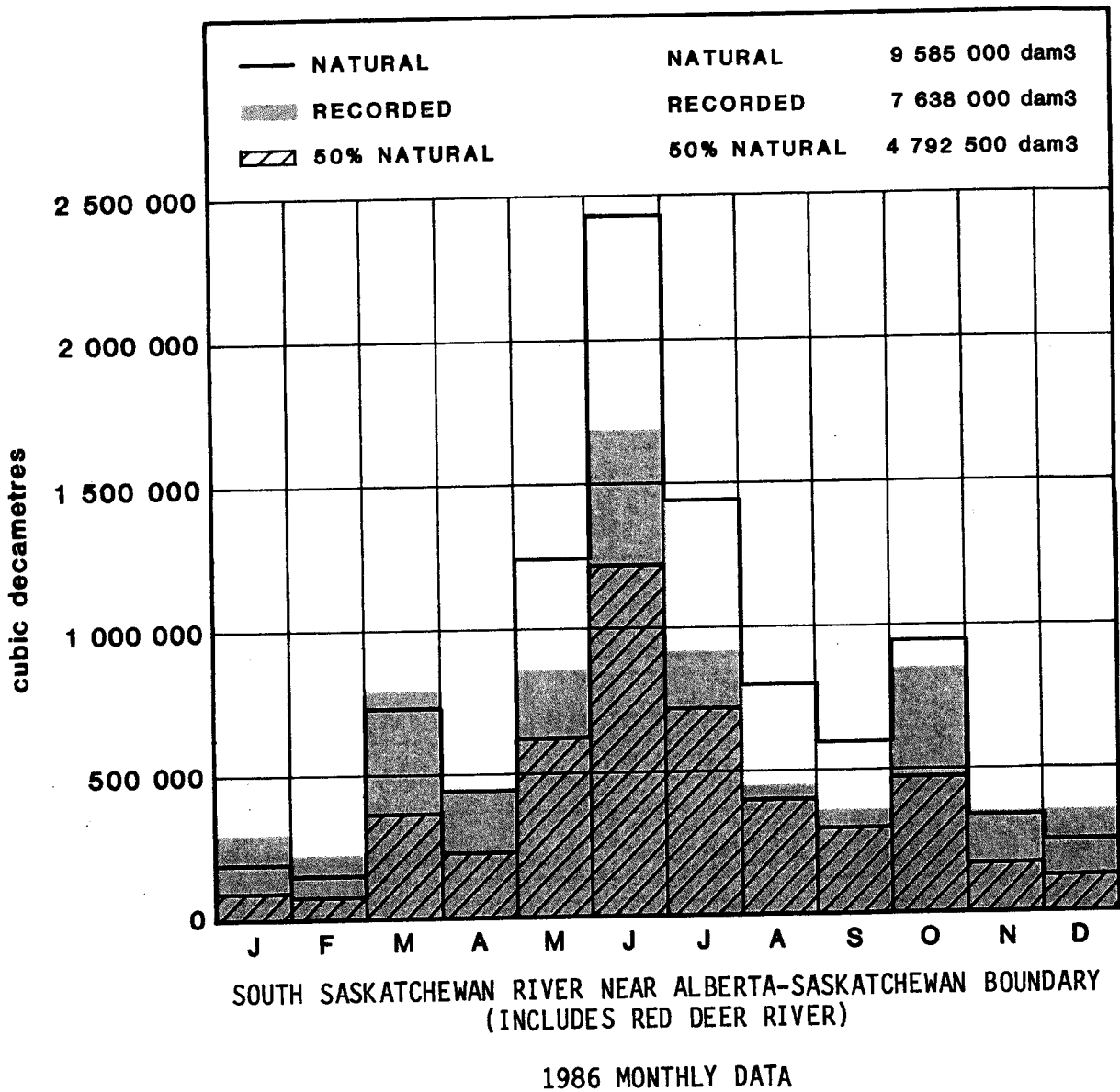
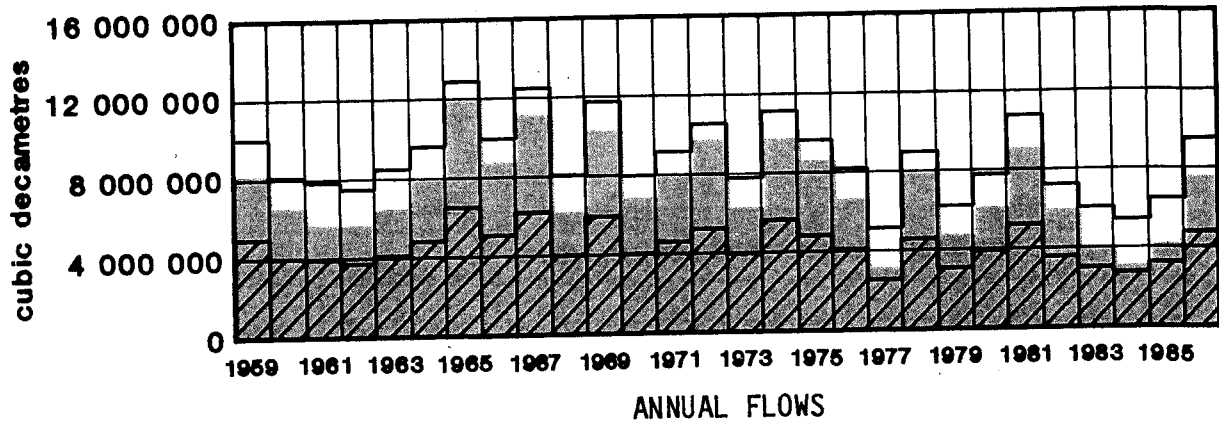
SOUTH SASKATCHEWAN RIVER -- BELOW JUNCTION WITH RED DEER RIVER

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	298 000	226 000	792 000	453 000	860 000	1 688 000	924 000	456 000	368 000	857 000	355 000	361 000	7 638 000
NATURAL FLOW	193 000	149 000	733 000	457 000	1 240 000	2 434 000	1 440 000	799 000	600 000	947 000	341 000	252 000	9 585 000

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 (PPMB Report No. 45).

Quantities shown in table have been routed to Alberta boundary.



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

FOR THE 1986 APPORTIONMENT PERIOD

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
<u>NORTH SASKATCHEWAN -- ALBERTA-SASKATCHEWAN BOUNDARY (NEAR DEER CREEK)</u>													
RECORDED FLOW	289 000	212 000	386 000	842 000	852 000	988 000	2 220 000	876 000	614 000	787 000	438 000	407 000	8 911 000
NATURAL FLOW	119 000	45 700	178 000	519 000	895 000	1 400 000	2 570 000	1 230 000	737 000	811 000	293 000	133 000	8 931 000
<u>BATTLE CREEK -- ALBERTA-SASKATCHEWAN BOUNDARY</u>													
RECORDED FLOW	-	667	1 940	911	2 480	1 260	629	501	1 880	1 050	-	-	11 320
NATURAL FLOW	-	667	1 940	915	2 500	1 330	706	533	1 840	948	-	-	11 380
<u>LODGE CREEK -- ALBERTA-SASKATCHEWAN BOUNDARY</u>													
RECORDED FLOW	-	4 000	12 400	655	3 150	279	4	0	24 200	2 150	-	-	46 840
NATURAL FLOW	-	4 170	13 000	893	3 280	472	123	147	24 500	2 020	-	-	48 610
<u>MIDDLE CREEK -- ALBERTA-SASKATCHEWAN BOUNDARY</u>													
RECORDED FLOW	-	1 710	4 900	197	621	58	44	33	1 710	191	-	-	9 464
NATURAL FLOW	-	2 030	5 540	164	648	71	10	21	1 800	218	-	-	10 500
<u>BEAVER RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY (AT COLD LAKE RESERVE)</u>													
RECORDED FLOW	3 710	4 020	8 030	42 000	42 500	25 300	89 400	83 800	14 600	9 480	6 190	6 910	336 000
<u>BATTLE RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY</u>													
RECORDED FLOW	1 230	1 340	29 600	72 900	30 800	29 100	21 000	32 000	15 100	14 500	9 400	5 040	262 000

**RECORDED AND NATURAL FLOWS - SUMMARY
SELECTED STREAMS CROSSING THE SASKATCHEWAN - MANITOBA BOUNDARY
(In Cubic Decametres)**

FOR THE 1986-87 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	1 770 000	2 000 000	1 690 000	1 720 000	1 920 000	1 550 000	1 890 000	1 870 000	2 070 000	1 980 000	1 870 000	2 020 000	22 350 000
NATURAL FLOW	1 610 000	2 210 000	2 530 000	2 700 000	3 220 000	2 350 000	2 380 000	1 970 000	1 980 000	1 820 000	1 620 000	1 710 000	26 100 000

SASKATCHEWAN RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY

ESTIMATED FLOW	1 950 000	1 930 000	1 990 000	2 100 000	2 630 000	1 370 000	1 720 000	1 240 000	1 130 000	1 210 000	1 390 000	1 630 000	20 290 000
APPORTIONMENT FLOW	2 370 000	2 460 000	3 040 000	2 710 000	2 770 000	1 400 000	1 780 000	1 020 000	811 000	795 000	779 000	970 000	20 870 000

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

RECORDED FLOW	17 500	20 200	5 730	5 700	4 110	550	9 270	14 200	7 850	6 190	6 560	10 400	108 300
NATURAL FLOW	29 300	27 300	19 900	18 500	5 800	400	20	0	0	0	0	11 500	112 700

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

RECORDED FLOW	140 000	196 000	63 600	17 400	21 600	13 100	25 000	5 740	5 970	5 710	5 130	5 990	505 200
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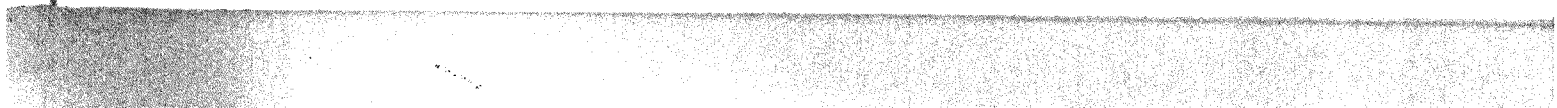
RED DEER RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (NEAR ERWOOD)

RECORDED FLOW	196 000	117 000	41 400	17 000	10 200	2 700	9 470	4 280	3 220	3 340	2 550	3 600	410 800
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ASSINIBOINE RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (AT KAMSACK)

RECORDED FLOW	157 000	32 500	9 660	6 090	1 850	157	481	1 040	1 190	1 100	955	4 670	216 700
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APPENDIX



APPENDIX INDEX

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PPWB MEMBERS

<i>Chairman</i>	<i>Ms. L. Goulet</i>	<i>Assistant Deputy Minister Environmental Conservation and Protection Environment Canada</i>
	<i>Dr. H.M. Hill</i>	<i>Director General Prairie Farm Rehabilitation Administration Agriculture Canada</i>
	<i>Mr. P.G. Melnychuk</i>	<i>Assistant Deputy Minister Water Resources Management Service Alberta Environment</i>
	<i>Mr. D.L. MacLeod</i>	<i>Vice President Resource Management Saskatchewan Water Corporation</i>
	<i>Mr. T.E. Weber</i>	<i>Director Water Resources Branch Manitoba Department of Natural Resources</i>
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<i>Secretary</i>	<i>Mr. G.W. Dunn</i>	<i>Water Quality Specialist PPWB Secretariat</i>

ALTERNATE MEMBERS

<i>R.A. Halliday</i>	<i>Regional Director Western and Northern Region Inland Waters/Lands Environmental Conservation and Protection Environment Canada</i>
<i>Mr. A.F. Lukey</i>	<i>Director Engineering Branch Prairie Farm Rehabilitation Administration Agriculture Canada</i>
<i>Mr. C.L. Primus</i>	<i>Director, Planning Division Alberta Environment</i>
<i>Mr. R.L. Kellow</i>	<i>Chief, Planning Division Resource Management Saskatchewan Water Corporation</i>
<i>Mr. N. Mudry</i>	<i>Chief Water Management Water Resources Branch Manitoba Department of Natural Resources</i>

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.

Members

Chairman	R.B. Godwin	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. Deeprise	Environmental Engineering Support 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 PPWB Secretariat

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.

Members

Chairman	R.B. Godwin	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
	P.G. Shewchuk	Standards and Approvals Division Alberta Environment
	E.W. Allison	Prairie Farm Rehabilitation Administration Agriculture Canada
<hr/>		
Secretary	G.W. Dunn	Water Quality Specialist PPWB Secretariat

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.B. Godwin	Executive Director Prairie Provinces Water Board
	D. McNaughton	Ground Water Division National Hydrology Research Institute
	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
<hr/>		
Secretary	A.J. Chen	Operations Engineer PPWB Secretariat

COMMITTEE ON [REDACTED] INTERJURISDICTIONAL AGREEMENTS ADMINISTRATION

(March 20, 1973 to December 10, 1986)

Terms of Reference

It was agreed that a committee consisting of the Executive Director, one member from Saskatchewan, one member from Alberta, and Mr. E.F. Durrant be struck to handle the problem of developing a methodology for the efficient administration of interjurisdictional agreements, particularly as regards Battle and Lodge Creek Basins.

PPWB Minute 8-35: March 20, 1973

Members

Chairman	R.B. Godwin	Executive Director Prairie Provinces Water Board
	B.N. Johnson	Water Resources Branch Environment Canada
	T.K. Olson	Watershed Management Saskatchewan Water Corporation
	A.J. Ferrett	Surface Water Rights Branch Alberta Environment

Secretary	A.J. Chen	Operations Engineer PPWB Secretariat
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The Board agreed, at Meeting #37, held in Saskatoon, Saskatchewan on December 9-10, 1987, to dismantle the Committee on Interjurisdictional Agreements Administration. The Committee has not met since February 15, 1984 and no additional Committee assignments are planned for the near future. The Board, at Meeting #37, expressed their sincere appreciation for the work of the Committee in past years.

STATEMENT OF EXPENDITURES

AUDITED STATEMENT PREPARED BY ENVIRONMENT CANADA
FOR THE PERIOD APRIL 1, 1982 TO MARCH 31, 1985

	<u>Submitted and Audited Amounts</u>		
	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>
Salaries	\$210 458	\$213 330	\$218 174
Travel and removal	15 777	14 112	15 087
Postage, freight & express	1 069	503	437
Telephone & telegraph	5 921	3 867	5 299
Professional & special studies	20 552	38 755	30 963
Computing services	15 793	26 601	16 998
Stenographic & typing services	802	1 635	2 600
Miscellaneous special services	5 034	109	-
Accommodation rental	12 000	12 720	12 720
Computer equipment rentals	7 365	2 332	5 304
Photocopying & office equipment rentals	28	6 150	14 340
Furniture, fixtures and office equipment	(1 076)	301	11 432
Stationery, printed matter and office supplies	74 047	13 674	4 586
Miscellaneous	1 056	195	1 721
Special Services	-	-	25 600
Deduct miscellaneous revenue	-	-	2 593
	<u>\$368 826</u>	<u>\$337 284</u>	<u>\$362 668</u>

Previous Board Expenditures (1970-71 to 1985-86)

Fiscal 1970-71	\$ 0
Fiscal 1971-72	105 174
Fiscal 1972-73	136 816
Fiscal 1973-74	158 274
Fiscal 1974-75	109 547
Fiscal 1975-76	143 805
Fiscal 1976-77	139 381
Fiscal 1977-78	163 008
Fiscal 1978-79	224 477
Fiscal 1979-80	500 387
Fiscal 1980-81	468 235
Fiscal 1981-82	436 785
Fiscal 1982-83	368 826
Fiscal 1983-84	337 284
Fiscal 1984-85	362 668
Fiscal 1985-86	376 830

FINAL CLAIM - 1985-86 and 1986-87

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).

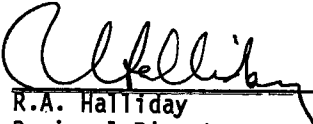
ITEMS	EXPENDITURES	1986-87	
	1985-86	BUDGET	EXPENDITURES
Salaries	\$230 765	\$229 000	\$234 770
Fringe Benefits	---		21 130
Computing Services	10 316	12 000	17 160
Natural Flow Reports and Studies	31 126	15 000	14 210
Consultant Studies	40 568	47 500	48 745
Personnel (Temporary replacements)	1 033	2 000	1 845
Transportation and Communications	13 347	20 500	19 225
Information - Printing	25 410	25 000	18 365
Rentals Office, etc.	18 641	32 500	30 764
Maintenance	1 262	1 500	1 030
Materials and Supplies	2 656	3 000	2 705
Acquisitions - Machine Equipment	2 171	1 000	5 030
SUB-TOTAL	\$377 295	\$389 000	\$414 979
Less Revenue from Sale of Books	465	=====	277
TOTAL	\$376 830		\$414 702 =====

Each province's share of 1986-87 expenditures (one-sixth of \$414 702) = \$69 117

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.

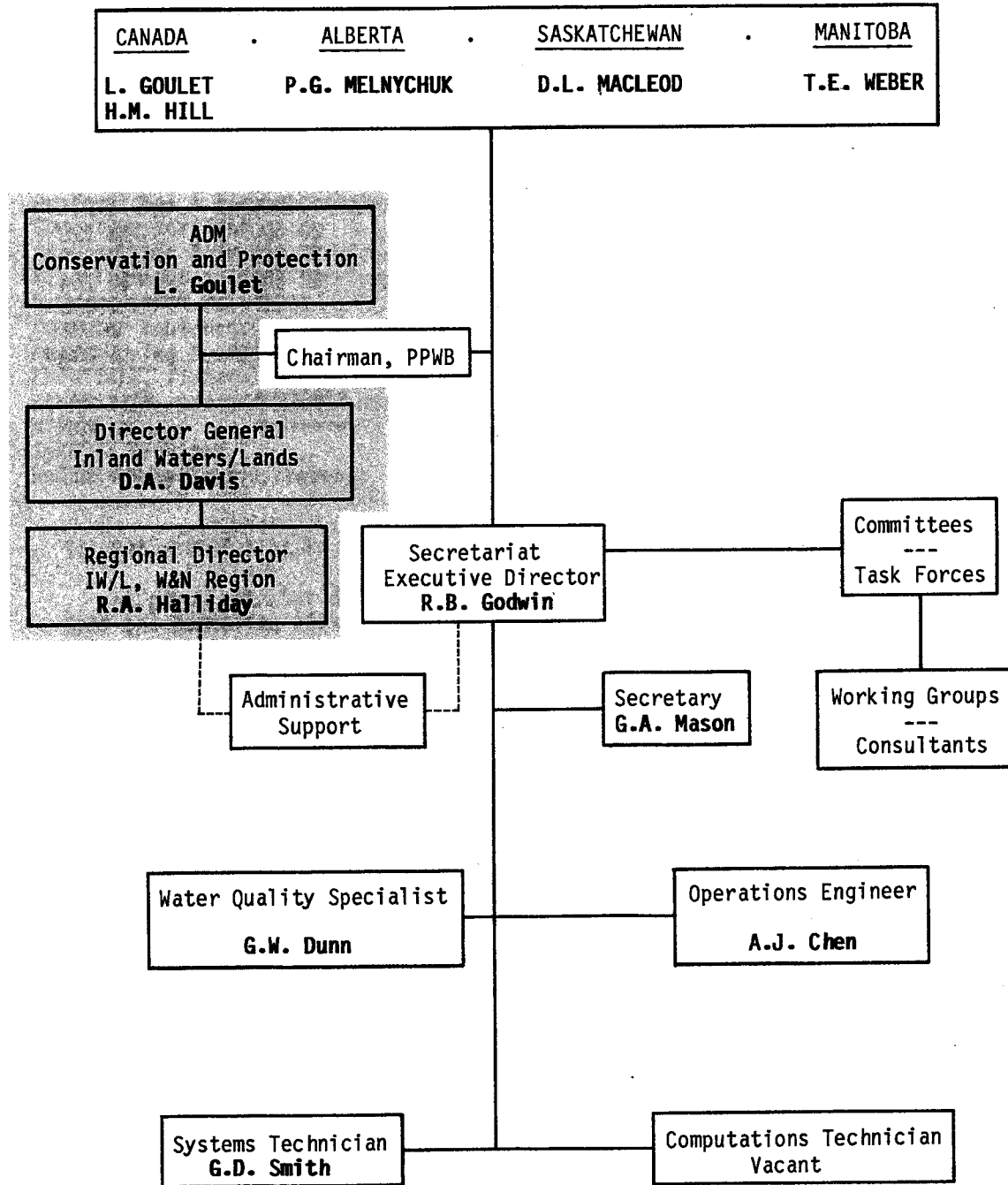

 Executive Director
 Prairie Provinces Water Board

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


 R.A. Halliday
 Regional Director
 Inland Waters Directorate
 Western & Northern Region
 Environment Canada

ORGANIZATION CHART

ORGANIZATION CHART PRAIRIE PROVINCES WATER BOARD



MASTER AGREEMENT ON APPORTIONMENT

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 cooperation 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 subparagraph 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.*

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.

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.

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.

"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

"Harold W. Pope"

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

"Allan R. Guy"

Minister in charge of The Water Re-
sources Commission Act

Section 6 amended on July 5, 1984.

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.

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.
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.

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.

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