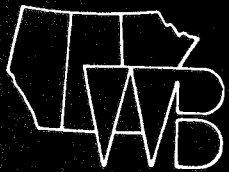


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ANNUAL REPORT

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FOR THE YEAR ENDING MARCH 31, 1983



PRAIRIE PROVINCES WATER BOARD

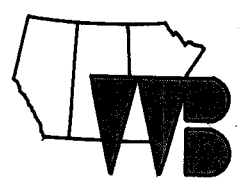
CANADA ALBERTA SASKATCHEWAN MANITOBA

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ANNUAL REPORT

FOR THE YEAR ENDING MARCH 31, 1983

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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 three times in the last fiscal year; on May 18-19, 1983 in Regina, Saskatchewan; June 23-24, 1982 in Edmonton, Alberta; and on November 17, 1982 in Regina, Saskatchewan. There was one change in Board membership in 1982; Mr. R.E. (Reg) Bailey, the member for Alberta since 1969 and one of the witnesses to the Ministers who signed the 1969 Master Agreement on Apportionment, terminated his Board Membership. His replacement is Mr. P.G. (Peter) Melnychuk, the Assistant Deputy Minister of Water Resources Management Service for Alberta Environment. The members were unanimous in expressing their appreciation for the years of dedicated service that Mr. Bailey has given to the work of the Prairie Provinces Water Board.

In the last fiscal year; the Committee on Hydrology met three times, the Committee on Water Quality twice, the Committee on Water Demand five times, the Committee on Interjurisdictional Agreements Administration twice, and the Committee on Groundwater twice; a total of fourteen 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, 1982 to March 31, 1983.

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 now operates through an Executive Director and his staff, supported by committees as shown in the organization chart on page 41. 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, 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. The Provincial Governments' shares of current expenditures are recovered after the current financial year is completed.

ADMINISTRATIVE DECISIONS

Several administrative decisions were made in the current fiscal year. They are summarized in the following sections:

Water Demand Study on "Historical and Current Water Uses in the Saskatchewan-Nelson Basin"

The Board, in completing this study in 1982, made several decisions. They agreed that 1400 copies of the main report and 400 copies of the appendices would be printed. The Distribution list for these reports was also agreed upon. The Board prepared and signed a Letter of Transmittal forwarding the reports to the Ministers. They recommended that the report be released by making a joint Press Release from all Ministers connected with the Board.

It was unanimously agreed that the Board would not proceed with water demand studies connected with forecasting the future use of water in the Prairie Provinces.

Natural Flow Studies on Small Interprovincial Basin

The Board made no formal commitments to conduct additional small interprovincial basin studies during the last fiscal year but PFRA made a verbal commitment to conduct water demand studies on the Swan River and Woody Rivers at the Saskatchewan-Manitoba boundary. Two interprovincial natural flow studies were completed in the last fiscal year; Battle River and Gainsborough Creek. Both reports have been reviewed by the Committee on Hydrology and accepted by the Board.

Implementation of the First Order Long Term Water Quality Network

The systematic implementation of a permanent network of water quality stations continues to be a matter of concern to the Board. Board Members have investigated alternatives within their own agencies to free resources and to establish agreements to expedite the implementation and maintenance of such a network. They have also directed the Committee on Water Quality to continue monitoring the implementation process and to report the network's current status to the Board on a regular basis.

Continuing Consideration of Interprovincial Groundwater Management

The Board, having formed a Committee on Groundwater to deal

with interprovincial groundwater concerns, has also noted that the Master Agreement on Apportionment makes no specific mention of groundwater. In order that interprovincial groundwater matters may be addressed and studied, the Board members have asked their Ministers to refer "consideration of interprovincial groundwater management on a continuing basis, except the apportionment thereof, to the Prairie Provinces Water Board" under Section 4(c) of Schedule C of the Master Agreement on Apportionment. All Ministers have agreed to this recommendation.

Interprovincial Implications of Proposed Projects

The Board has agreed that a statement of the impact that any major project would have on the quantity and quality of water crossing interprovincial boundaries should be submitted through the appropriate provincial member, and reviewed by the Secretariat in consultation with Board Committees. The Board, in the past financial year, has been active in the evaluation of three such projects:

The Proposed Cold Lake Oil Sands Project

It was agreed that the Committees on Hydrology, Water Quality and Groundwater should maintain a watching brief on the development of the proposed Cold Lake Oil Sands Plant, and that they should keep the Board apprised of any plans which may affect the quantity and/or quality of water crossing the Alberta-Saskatchewan boundary.

The Proposed Qu'Appelle River Conveyance Project

The Committees on Groundwater, Hydrology, and Water Quality have completed their review of the Qu'Appelle River Conveyance Project. Based on this review, the Board forwarded a letter to the Ministers indicating that the Proposed Qu'Appelle River Conveyance Project will have no significant adverse effect on the quantity or quality of streamflow at the Saskatchewan-Manitoba boundary.

The Proposed Control Structure at the Outlet of Cumberland Lake

Saskatchewan has proposed construction of a weir across Bigstone Cutoff and a bridge across the Tearing River. A report will be prepared by the project proponent to provide an assessment of the effects that this construction might have on the Saskatchewan River at the Manitoba-Saskatchewan boundary and on the Manitoba portion of Namew Lake.

Battle and Lodge Creek Basins Apportionment Study

The Board, at their meeting, on May 6-7, 1981 accepted a report entitled "Battle and Lodge Creek Basins Apportionment Study - PPWB Report No. 61." That report recommended that Schedule 6, Article A of the 1969 Master Agreement be amended to reflect the recommendations with respect to apportionment, and that the Amendment be formalized by Ministerial approval. The Board Secretariat, under the direction of the Board, prepared a formal amending agreement to implement this course of action. The Agreement was tentatively accepted by the Board at their meeting on November 17, 1982 and

submitted to legal council of the Member Agencies for their consideration, prior to being forwarded to each government for Order-in-Council approval.

Report on Cumberland Lake Marshes

The Board reviewed the annual report prepared on the Cumberland Lake Marshes and agreed that the next report on this subject should include a summary of water quantity and quality monitoring for the past five years. This report could then be used to determine what changes, if any, are taking place in the project area.

The Use of WATDOC to Document Groundwater Publications

The Board agreed that WATDOC should be used to maintain a current groundwater bibliography of the prairie provinces, and recommended that Alberta be the first Province to enter their reports on the WATDOC system.

The Report on "Westward Flowing Tributaries of Eastward Flowing Streams"

The above report recommends an apportionment method that may be used to apportion each westward flowing tributary individually. It was forwarded to the Board following its approval at the Committee on Hydrology meeting on September 21-22, 1982. The Board agreed to defer discussion on the report until the Spring 1983 Board Meeting.

PPWB Budget for 1983-84

The Board approved a total budget of \$344 000 for fiscal year 1983-84.

BOARD STUDIES

Water Demand Study

The Prairie Provinces Water Board, in 1970, established a task force to examine the need, and to develop terms of reference, for a water demand (or water use) study. In January 1972 that Task Force submitted a report to the Board outlining the need for such a study in the Prairie Region. Subsequently, at a meeting of the SNBB Committee of Ministers, it was agreed that the Study should be undertaken, but that it should be divided into two parts. The first part would document historical and current water uses; the second would forecast future water demands. An updated study plan was accepted by the Board in May 1976 but implementation for documenting historical and current water uses was postponed until May 18, 1977 when all members of the Board reaffirmed their desire to proceed with the proposed study at a total estimated cost of \$880 000. The final report of the Water Demand Study: HISTORICAL AND CURRENT WATER USES, was originally scheduled for completion by March 31, 1982. The Board agreed that the Water Demand Study be granted a six month extension to September 30, 1982, and that \$90 000 should be made available in 1982-83 to complete that Study. In 1982 the Board decided that they would not, at that time, proceed with a study of future water demands.

The Water Demand Study has been divided into six sectors, each managed by a Sub-committee chaired by the Study Director and under the overall direction of the Committee on Water Demand. Each of these sectors was responsible for producing an appendix to the main report. The six appendices described the following six study areas in detail; the regional economic base, municipal and industrial, agriculture, power generation, recreation, and environmental considerations.

The Study was completed in the fall of 1982 at a total cost of \$911 549. The Board agreed to print 1400 copies of the main report and 400 copies of the seven volumes that form the six appendices. The study report was forwarded to the Ministers of participating agencies and they released the study to the public on February 10, 1983, with each of the five Board members, making a joint Press Release concerning the study. Copies were then distributed to interested agencies, libraries, and educational institutions using a distribution list that had been previously approved by the Board.

Copies have also been distributed to individuals requesting the report on a cash basis, with fifty dollars plus shipping being charged for the complete report, ten dollars for the main report only, and twenty dollars for the main report and the municipal and industrial use appendix.

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 might be completed would depend on the availability of participating agencies.

Studies were completed in previous years on Pipestone Creek, Antler Creek, Assiniboine River, Boxelder Creek, Mackay Creek, and Graham Creek. During the current fiscal year, 1982-83, studies were completed on the Battle River and Gainsborough Creek. Studies are presently underway on Eyehill Creek, Big Gully Creek, and the Beaver River. The above studies were prepared under the direction of the Secretariat and the Committee on Hydrology.

The Hydrology Division of PFRA has also agreed to undertake studies on the Swan River and Woody River as soon as they have completed the study on Big Gully Creek. No further commitment has been made to complete further studies on small interprovincial basins, but the need for such studies has been identified on an additional eight streams:

Birch (Saskeram) River	Overflowing River
Jackson Creek	Red Deer River (Saskatchewan)
Elm Creek	Gopher Creek
Stony Creek	Bosshill Creek

Site Specific Water Quality Objectives Study

The Committee on Water Quality and the Secretariat are systematically reviewing water quality data collected at the eleven PPWB monitoring sites. As a first step in making this review, they have prepared a report entitled "Water Quality Administrative Procedures". This report, proposed water quality administrative procedures that may be used to administer water quality at interprovincial sites. It was presented to the Prairie Provinces Water Board in 1982, and was tabled pending more definitive information on how water quality requirements would be achieved at specific sites.

As an example of the way that water quality requirements at specific sites would be presented to the Board, the Committee also prepared a draft report on "Water Quality Requirements for the Beaver River at the Alberta-Saskatchewan Boundary". This report will be the first of eleven such reports that will define water quality requirements at each of the eleven interprovincial PPWB monitoring sites. The Board noted that this report had been prepared and asked the Committee on Water Quality to make some revisions and changes to the report to ensure that there would be adequate consideration given to the quality of waters that cross both the Alberta-Saskatchewan boundary and the Saskatchewan-Manitoba boundary.

Westward Flowing Streams Study

The Board recognizes that streams which cross interprovincial

boundaries in an east to west direction may not be covered by the 1969 Apportionment Agreement. At the November, 1973 meeting of the Board, the members observed that, although no problems have arisen, the situation should be considered in view of the probable time involved to develop a satisfactory solution.

The Committee on Hydrology in analyzing this problem, has divided the study of Westward Flowing Streams into two parts; the streams that are westward flowing tributaries of eastward flowing streams and the streams that are westward flowing streams that are not subsequently tributary to eastward flowing streams. Two separate reports were prepared dealing with these two categories. The reports commented on the number and size of streams involved, and considered possible apportionment alternatives. They recommended possible solutions taking into account relevant precedures. Both reports were forwarded to the Prairie Provinces Water Board for their consideration.

Interprovincial Drainage Task Force

The Board has accepted a reference from the provinces of Saskatchewan and Manitoba to deal with specific problems involving artificial drainage on a series of small interprovincial streams that affect the rural municipalities of Churchbridge, Langenburg, Shellmouth, and Russell. A Task Force has been struck consisting of the Executive Director of the Secretariat and one member each from Saskatchewan Environment and Manitoba Department of Natural Resources.

The Task Force has made a field tour to examine the problem, and has discussed the situation with counsellors from the four rural municipalities involved, and the Board has approved a plan of action. It proposes that the Province of Saskatchewan do studies to determine the effect of drainage to date on the volume and intensity of flow at the affected boundary points, and to evaluate what effect further drainage might have on these particular streams. Manitoba will then determine both the physical effect that the changes in flow will have on streams entering into the Assiniboine River, and whether the effects will increase flooding downstream from Shellmouth reservoir. Finally, the Task Force will recommend a solution that is acceptable to both provinces. Saskatchewan Environment are now preparing a report on the first stage of the study. The task force is unable to proceed with further work until this study is finished.

Updating of PPWB Monthly Natural Streamflow Estimates

The Board has agreed that the Secretariat should assume the continuing responsibility for updating the Saskatchewan-Nelson basin monthly natural streamflow estimates. They have instructed the Executive Director to bring the monthly streamflow files up to date as soon as practical and to ensure that they are updated annually.

This activity coincides with an Alberta Environment study to update monthly natural streamflow records for the South Saskatchewan River basin including the Red Deer River basin. Agency activities have been coordinated to ensure that the estimates produced by Alberta Environment will be usable for Board purposes as well as for planning purposes in Alberta. It

is hoped that monthly natural flow records will be updated to 1982 in the fiscal year 1983-84 so that they may be used with data from the recently completed Water Demand Study.

Forest Management Study for Increased Water Yields

There has been considerable interest for several years in the Province of Alberta on the possibility of managing the eastern slopes of the Rockies to benefit water production and to control other uses of the forest area. Alberta Environment and the Alberta Forest Service, in co-operation with Federal Agencies, have the management responsibilities for this green zone. They will continue to keep the Board informed, through the Committee on Hydrology, of the conduct and results of these studies.

A Study of Irrigation Return Flow Index Stations

The Board, at the recommendation of the Committee of Hydrology, asked Water Survey of Canada, Calgary, to conduct a study of irrigation flow index stations being used to estimate return flow from Alberta irrigation districts. A previous study has been made by Water Survey of Canada in 1971 and 1972, as part of the establishment of return flow methodology for the South Saskatchewan river. The characteristics of irrigation return flow in this basin are changing with greater emphasis being placed on mechanized sprinkler irrigation. This creates potential decreases in return flows. Water Survey of Canada was asked to take additional measurements as required, and to submit a recommendation on the procedure that should now be used to estimate return flow from Alberta irrigation districts. The results will be used to estimate net irrigation use for apportionment purposes. The study has been completed in draft form by Water Survey of Canada and will be forwarded to the Board after being reviewed by the Committee on Hydrology.

Impact of Drainage on Downstream Watersheds

The Committee on Hydrology presented a brief letter report entitled "Applied Hydrology Research to Determine the Impact of Artificial Drainage on Downstream Flows". The Board, after reviewing this report, agreed that the Committee should maintain a watching brief on drainage and report on drainage research studies that might be used to determine the effects of artificial drainage on downstream flows in prairie streams. As an interim working procedure, the Board agreed to use the approach developed by Saskatchewan Environment to assess the impact of drainage on runoff. There was concern that a criteria for identifying artificial drainage projects, that might have an impact on either the quantity or quality of waters, was needed. The Board agreed that the Committee on Hydrology should develop and recommend practical procedures that would permit Board agencies to maintain a watching brief on drainage projects that could have a significant impact on the quantity or quality of flow in interprovincial streams. The Committee on Hydrology has taken this problem under advisement.

Water Quality Task Force

The Board, in fiscal year 1980-81, approved terms of reference for a 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. The Board directed the Task Force to continue to work toward the implementation of equivalent methodologies to develop a compatible long term water quality data base for streams in Western Canada.

The recommendations contained in the Committee's report were accepted, and the Board Chairman agreed to ask Inland Waters Directorate to provide the technical support services needed to implement the report's recommendations.

Inland Waters Directorate has provided additional support staff at the Canadian Centre for Inland Waters in Burlington to work on this problem. They have circulated test samples to the laboratories involved with the Prairie Provinces Water Board and will analyze the results of these samples. They plan to send out additional similar samples to cover-off the range of parameters now being monitored. It is too early in this study, to predict when a final report on the compatibility of results may be expected.

Apportionment of Boxelder and Mackay Creeks Basins

A study is being made prepared the direction of the COIAA on continuing apportionment problems in the Boxelder and Mackay Creeks Basins, two small basins that cross the Alberta-Saskatchewan boundary. Because of the heavily developed nature of the tributary basins, the limited amount of water becomes critical to water users in this area. A trip was made to the drainage basin in the summer of 1982 and a draft report is now being prepared by the Secretariat analyzing the problem.

BOARD COMMITTEES

Committee on Hydrology

The Committee on Hydrology met three times in the last fiscal year. The meetings were held on September 21-22, 1982 in Edmonton, Alberta; on January 11-12, 1983 in Regina, Saskatchewan; and on March 21-22, 1983 in Winnipeg, Manitoba. At the first of these three meetings, the members reviewed the draft report entitled "Westward Flowing Tributaries of Eastward Flowing Streams Apportionment Study" and agreed to present that report to the Board for their approval at the November 1982 Board Meeting. Current minimum flow objectives for designated rivers in the Prairie Provinces were also reviewed and approved for documentation in the Prairie Provinces Water Board - Water Demand Study - Main Report.

The Committee, at its January meeting, finalized the draft report entitled "Interprovincial Apportionment of Westward Flowing Streams" and agreed that the report be forwarded to the Board for their consideration. They also reviewed a final draft of a report entitled "Procedures for Interprovincial Apportionment of the Waters of Battle, Lodge, and Middle Creeks" prepared by the Water Resources Branch, Calgary office and agreed that the procedures outlined in the report should be used to calculate natural flow for Battle, Lodge, and Middle Creeks at the Alberta-Saskatchewan boundary for apportionment purposes.

The Committee discussed a draft report on "The Impact of Artificial Drainage on Downstream Flows". They agreed that further discussion is required at the Committee level before the information can be forwarded to the Board. The Committee also reviewed a draft report of the Eyehill Creek Natural Flow Study, approved the priority list of small basins still to be studied, and discussed the hydrometric network needed to monitor apportionment on these small interprovincial streams.

Committee on Water Quality

The Committee on Water Quality met twice in the 1982-83 fiscal year: in Winnipeg on September 29-30, 1982; and in Regina on February 1-3, 1983. The members exchanged information on the Proposed Cold Lake Oil Sands Plant, the Proposed Federal-Provincial Water Quality Agreements, and the Prairie Provinces Water Board Water Quality Analytical Task Force. They also agreed that IWD should discontinue monitoring for aromatic and aliphatic hydrocarbons at all PPWB monitoring sites, agreed to discontinue monitoring for picloram at selected locations, and agreed to continue the Annual Water Quality Data Report publication.

The July draft of the report entitled "PPWB Water Quality Administrative Procedures" was edited and it was agreed that the report should be submitted to the November, 1982 PPWB meeting. The Committee, prior to the review of this report, discussed the concept of Administrative Procedures as they relate to rivers which cross more than one boundary and agreed that each interprovincial PPWB site could be treated individually when PPWB water quality requirements were established.

The July draft of the "Prairie Provinces Water Board Water Quality Requirements for the Beaver River at the Alberta-Saskatchewan Boundary" was also reviewed. The members decided to investigate two alternate methods that could be used to develop PPWB water quality requirements for major ions.

The members also exchanged information on Federal-Provincial Water Quality Agreements, the Cumberland Marshes-Ducks Unlimited Monitoring program, the water quality of the Birch and Saskeram Rivers, the CFB Cold Lake Pesticide Application, Proposals for Forest Management and Industrial Development in the Brazeau Timber Development area, and other water quality activities of interest to the PPWB members. They also recommended that the Secretariat examine alternative and cheaper methods of plotting data for future Water Quality Annual Reports.

The members discussed issues and agency concerns regarding the proposed method of establishing site-specific water quality requirements, and reviewed two alternative methods that could be used to develop seasonal water quality requirements for major ions. A two-level approach was proposed for developing site-specific water quality requirements at the interprovincial boundaries. A detailed statistical analysis, using the proposed two-level approach, is near completion for the Beaver River and the approach will also be used on South Saskatchewan River data to determine the feasibility of using it to develop water quality requirements on the South Saskatchewan River at the Alberta-Saskatchewan boundary.

Committee on Groundwater

The Committee on Groundwater met twice in the last fiscal year. The meetings were held on August 11-12, 1982 in Regina, Saskatchewan, and on January 16-17, 1983 in Edmonton, Alberta. On August 11, 1982, the Committee members visited the IMC-K2 potash mine plant at Esterhazy, Saskatchewan. The tour was guided by the plant manager and a plant engineer. The Committee members had the opportunity to tour a potash mine plant, plant wastewater tailing pond, and existing seepage control facilities around the project site.

The Committee met on August 12, 1982 in Regina. They reviewed the study outline of a report being prepared for Alberta Environment entitled "Impact of Subsurface Fluid Disposal on Aquifer Systems in Northeastern Alberta and Northwestern Saskatchewan - Part 1: Assessment of Existing Information" by Dr. W.A. Meneley, and a study proposal prepared by him entitled "Preliminary Assessment of Future Project Needs." They suggested that it would not be practical to proceed with the study proposal until the first study report had been completed.

After discussing concerns raised by the Board on the use of WATDOC approach to prepare a bibliography of groundwater reports in the Prairie Provinces, the Committee agreed that the problems associated with the WATDOC approach, and the attendant publicity to reports, can be best resolved individually within each agency. They agreed that WATDOC is the best way to maintain a current groundwater bibliography of the prairie provinces and recommended to the Board that this data base be used.

Some preliminary discussion also took place concerning the feasibility of using the NAQUADAT system to document water quality data from groundwater sources in the prairie provinces, but the Committee was not prepared to make any recommendation to the Board on this subject.

At the January meeting, the Committee discussed progress of the proposed bibliography of groundwater reports in the prairie provinces and agreed that each member agency should provide WATDOC with groundwater reports using the WATDOC format. They also recommended that, when all groundwater reports have been filed in this data bank, the Board should publish a bibliography covering listed groundwater reports in the prairie provinces, that each member agency should be responsible for updating their own groundwater reports, and that the Secretariat should only serve in a coordinating role.

A draft report entitled "Format and Methodology That May Be Used for Mapping Interprovincial Aquifers" was discussed by the committee. The committee felt that mapping of hydrogeological information of the inter-provincial boundary areas is not urgently needed and agreed that no immediate action should be taken to establish cross-section and hydrogeological mapping of interprovincial aquifers.

Committee on Interjurisdictional Agreements Administration

The Committee on Interjurisdictional Agreements Administration met twice during the last fiscal year; once on June 21-22, 1982 in Medicine Hat; and on October 19-20, 1982 in Regina, Saskatchewan.

On June 21, 1982 the Committee members visited existing irrigation projects and control structures in the Walsh Flats area, five large community reservoirs in the Boxelder Basin, and other critical areas in the basin where existing projects might cause problems in the calculation of natural flows of Boxelder and Mackay Creeks at the interprovincial boundary.

At the meeting, on June 22, 1982 in Medicine Hat, the Committee discussed existing allocations in the Walsh Flats area, and reviewed a proposal to transfer certain water rights between Alberta and Saskatchewan in the Walsh Flats area. The Committee agreed that, at this stage in time, efforts should be concentrated on updating allocation of projects in the Walsh Flats area rather than discussing specific apportionment proposals for the Boxelder and Mackay Creek Basins.

At the October 19-20, 1982 meeting, discussions continued on apportioning the waters of the Boxelder and Mackay basins. Based on present water rights, the available flow in the basins appears to be fully committed so both natural flow estimates and water rights allocations are being care-

fully checked to verify their current status before the Committee gives further consideration to specific apportionment proposals.

The Committee also briefly reviewed a draft "Procedural Manual for Battle and Lodge Basins Interprovincial Apportionment." Their comments will be considered by the Committee on Hydrology before approving this manual.

Committee on Water Demand

The Committee on Water Demand met five times in the 1982-83 fiscal year. The meetings were held on May 6-7, 1982 in Regina; on June 7, 1982, in Regina; on August 10, 1982 in Edmonton; on September 15, 1982 in Winnipeg; and on October 27-28, 1982 in Regina. All five meetings dealt with the preparation of the final reports for the Water Demand Study. At the May 6-7, 1982 meeting a final draft of the Water Demand Study Main Report was prepared for the Board. Chapters 10, 11, and 12 of the Main report were revised as directed by the Board at their May meeting and a new draft was prepared for submission to the June Board meeting.

It was reported to the Committee at the August 10, 1982 meeting that the Board was not prepared, at that time, to consider a Part II study. The text of the main report was revised to reflect this agreement. A July draft of the Main Report was reviewed in detail and several changes were made to improve the readability of the report. The Committee also agreed on the format to be used in presenting graphics in the Main Report.

The Committee, at their September meeting, reviewed the final text of the Main Report, the proposed letter of transmittal, and the acknowledgements section. They also reviewed a draft of the Municipal and Industrial sector report and recommended that changes be made to the draft before it was accepted. The final drafts of the sector reports for Environmental Considerations, Recreation, and Agriculture were reviewed and accepted. At the end of September, 1982 only the Power Sector, the Municipal and Industrial Sector, and the text of the Main Report need to be reviewed to complete the Water Demand Study.

At the October 1982 meeting, the committee reviewed the Main Report and made format and editorial changes to be completed by the Secretariat. The Committee also reviewed and accepted the Municipal & Industrial and Power sector reports. They then reviewed the draft Press Release for the Water Demand Study and recommended that the Secretariat report to the Board on a proposal to form a committee to implement the recommendations of the Committee on Water Demand.

As the Committee has completed the work assigned to it for the Water Demand Study, no date was set for further meetings. The Water Demand Study office has been closed and the files related to the study have been transferred to the Secretariat of the Prairie Provinces Water Board.

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 Regional Office of the Inland Waters Directorate of Environmental Conservation Services, Environment Canada and the Prairie Farm Rehabilitation Administration. Personnel and Financial Administrative Services are provided through the staff of the Inland Waters Directorate of the Environmental Conservation Services of Environment Canada.

There were seven staff changes in the past year. The position of Water Quality Specialist was filled by Gary Dunn on May 25, 1982. Barry Cox, the Computations Technician resigned on May 31, 1982 to take a position with Water Survey of Canada. His position was filled by Blaine Trumbley effective June 28, 1982. Gordon Smith was hired effective June 28, 1982 to fill the position of Systems Technician with the Board. On February 11, 1983 Blaine Trumbley resigned his position as Computations Technician to take a similar job with the Hydrology Division of PFRA. Ken Born was hired to replace him on February 7, 1983. As of March 31, 1983 the Secretariat was at full strength.

Mr. Jones, the Water Demand Study Director and Ms. Vaisey, the Assistant Study Director, resigned from the Water Demand Study to take employment with PFRA. Mr. Jones's resignation was effective on April 19, 1982 and Ms. Vaisey's resignation was effective May 25, 1982. PFRA agreed that Mr. Jones and Ms. Vaisey would be available on a limited basis to ensure that the Water Demand Study reports were completed. Ms. Carol Machin, who filled the position of Secretary to the Water Demand Study, resigned effective December 17, 1982. The position was not refilled as the Water Demand Study was almost completed.

The Water Demand Study was officially released on February 10, 1983. Since that time some 300 sets of the report and 800 copies of the main report only have been distributed to agencies and individuals using the distribution list previously approved by the Board. Also, some complete sets and main reports only have been sold to private individuals, consulting firms, etc.

Reports

The Secretariat published, and distributed to Member Agencies, the sixth annual report containing water data collected at eleven Prairie

Provinces Water Board monitoring stations. Distribution was limited to personnel directly connected to the Board's quality of water activities.

Five Board reports were published in the past twelve months. They are listed below:

- PPWB Report No. 63 - Gainsborough Creek at the Saskatchewan-Manitoba Boundary - Natural Flow - June 1982 (Prepared for the PPWB by PFRA).
- PPWB Report No. 64 - Battle River at the Alberta-Saskatchewan Boundary Natural Flow - June 1982 (Prepared for the PPWB by Alberta Environment.).
- The Water Quantity/Quality Monitoring Program - Cumberland Marshes Project - 1981 Annual Report - June 1982 (Prepared for the PPWB by WSC).
- Interprovincial Water Quality Data at PPWB Monitoring Stations - April 1974 to December 1981 - October 1982.
- Historical and Current Water Uses in the Saskatchewan-Nelson Basin - February 10, 1983 (Consists of a main report and seven volumes of appendices).

Information

The work of the Secretariat for the past financial year has been primarily connected with Committee and Board studies. These activities have been reported under the section entitled "Board Studies" and "Board Committees." Due to staff limitations caused by the resignation of Mr. Jones and Ms. Vaisey, and the extra work involved in completing the Water Demand Study, some of the other work of the Board was delayed during the past year so that the Water Demand Study would be published in the 1982-83 fiscal year.

New job descriptions have been prepared for all staff positions. They were reviewed and finalized as part of the overall plan to more precisely define work areas and job responsibilities in the PPWB Secretariat. All members of the Secretariat participated in a management by objectives exercise to establish work goals and priorities for the 1983-84 fiscal year. These work goals are based specifically on the duties of the Secretariat and on the Secretariat's job descriptions.

Financial

Secretariat expenditures for the financial year 1982-83, are as shown on page 43. They indicate a total expenditure of \$368 826 composed of \$258 401 spent on Board activities and \$110 425 spent on Water Demand Study expenditures.

The accounts of the Prairie Provinces Water Board have been certified by a Senior Officer of Canada as agreed in Section 15C of the Prairie Provinces Water Board Bylaws.

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 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 Survey of Canada 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 1982-83 and that list was approved by the Board.

The 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 6 106 700 cubic decametres in the South Saskatchewan River below its junction with the Red Deer River is 83% of the total annual natural flow of 7 355 200 cubic decametres. Recorded discharge of the South Saskatchewan at the apportionment point did not fall below 42.5 cubic metres per second or one-half of natural flow at any time during 1982, so the minimum flow criteria was met for the complete apportionment period. A summary of recorded and natural flows for 1982 at this site is shown on pages 26 and 27.

The natural flow of the Qu'Appelle River from April 1, 1982 to March 31, 1983 was 194 300 cubic decametres. Recorded flow augmented by releases of 37 800 cubic decametres from Diefenbaker Lake, and by "draw-down" water from lakes in the Qu'Appelle Valley, was 295 300 cubic decametres, 152% of natural flow. Recorded and natural flow for the period January 1982 to March 1983 is shown on page 29. This covers both the calendar year 1982 and the apportionment period of April 1982 to March 1983.

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 on these two specific basins. The SSARR model is now being reviewed by a Sub-committee of the Committee on Hydrology.

When this review has been completed the model will be modified and recalibrated to metric units.

Natural flows were also calculated for the North Saskatchewan River at the Alberta-Saskatchewan boundary, the Saskatchewan River at the Saskatchewan-Manitoba boundary, and the Churchill River at the Saskatchewan-Manitoba boundary. Monthly recorded and natural flows for the 1982 apportionment year at these three sites are shown on pages 28 and 29. Recorded flow for 1982 at five other boundary sites are listed on pages 28, 29, and 30.

PPWB Water Quality Monitoring Program

The Water Quality Branch of Environment Canada continued to monitor monthly or quarterly data collected at eleven PPWB monitoring stations for the 88 parameters listed on page 24. These water quality monitoring stations correspond with the interprovincial hydrometric locations mapped on the last pages of this report.

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, 1981 has been validated, published in the PPWB Annual Water Quality Reports, and distributed to member agencies.

The data from these monitoring stations is collected to define water quality characteristics in rivers crossing interprovincial boundaries and to estimate compliance with the "1973 PPWB Water Quality Objectives" for those parameters marked with an asterik (*) on page 24. The Board, through the Secretariat, continually reviews the water quality data from the eleven PPWB stations.

Review of the 1982-83 water quality data from PPWB monitoring stations indicates that the "1973 Water Quality Objectives" were exceeded at least once at each site for one or more parameters. Approximately 80 percent of the parameters, with specific water quality objectives, were exceeded at least once during the 1982-83 fiscal year. The PPWB station with the highest frequency of exceeded objectives was the Battle River near Unwin station followed closely by the Assiniboine River below Kamsack and Qu'Appelle River near Welby stations.

The majority of PPWB stations during 1982-83 experienced winter dissolved oxygen levels well below the 1973 objective of 5.0 mg/litre. The "1973 Water Quality Objectives" for manganese were frequently exceeded (a total 38 times in the past year at seven of the eleven PPWB stations). Total phosphorus was also exceeded repeatedly. The 1973 objective of 0.15 mg/litre was exceeded 81 times between March 1982 and March 1983 at a total of ten of the eleven PPWB stations. The total nitrogen objective of 1.0 mg/l was exceeded on numerous occasions. Total nitrogen was exceeded 36 times in the last year at ten of the eleven PPWB sites. The acceptable level for cyanide was exceeded a total of six times and phenols were exceeded five times. Other water quality parameters with water quality objectives, seldomly if at all, exceeded the 1973 objectives. Boron, mercury (total) and lead (total) concentrations did not exceed the 1973 Objectives at any PPWB monitoring site during the past year.

Several biocides were detected at the PPWB water quality stations in the last year. Alpha BHC was detected in 91 percent of the samples collected between March 1982 and March 1983, and lindane was present in 7 percent of the samples. Twenty-seven percent of the samples contain detectible levels of 2,4-D. The North Saskatchewan River near Deer Creek and the South Saskatchewan River at Highway 41 experienced the most detections for biocide. Sixty-six percent of the samples contained alpha BHC; 2,4-D; or gamma BHC.

In reviewing the 1982-83 data, it is evident that the "1973 Surface Water Quality Objectives" are not practical for some streams. The Secretariat, under the direction of the Board, is now establishing site specific water quality requirements for each of the eleven PPWB water quality monitoring stations. These will more adequately reflect the specific characteristics of each stream being sampled.

Ducks Unlimited Cumberland Marshes Project

The Board as part of its interprovincial monitoring responsibilities has a continuing interest in the Ducks Unlimited Project, recently constructed in the Cumberland Marshes area, and the effect that project might have on downstream water quantity and quality. Reports on the Board's operations are prepared annually by Water Survey of Canada in consultation with the Water Quality Branch of Inland Waters Directorate, Ducks Unlimited, and Saskatchewan Environment. The fourth report describing the operation of this project during 1981 was submitted to the Board in June 1982 and is available upon request.

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". The material contained in these three reports will be used in future years to maintain and establish new guidelines to administer the 1969 Apportionment Agreement.

Similar documents are now being prepared to establish more precise water quality procedures and water quality requirements that can be used to more equitably monitor the quality of water passing from upstream to downstream provinces. These studies have been reported on in the section entitled "Board Studies".

**PPWB WATER QUALITY MONITORING
1982 PARAMETER LIST**

- *Aldrin
- Alkalinity, phenol.
- Alkalinity, total
- Aluminum, extractable
- N-Alkanes
- Aromatic Hydrocarbons
- *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, ext.
- Cobalt, Total
- Coliforms, fecal
- Coliforms, total
- *Color, true
- *Copper, Total
- *Cyanide, total
- *P,P-DDD
- *P,P-DDE
- *O,P-DDT
- *P,P-DDT
- *Dieldrin
- 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.
- *Manganese, diss.
- 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
- Sulphate, diss.
- *Temperature
- *Turbidity
- Vanadium, Total
- *Zinc, Total
- 2,4-D
- 2,4-DB
- 2,4-DP
- 2,4,5-T

* Objectives exist

1982 FLOW DATA



RECORDED AND NATURAL FLOWS,
CONSUMPTIVE USE, DIVERSION, AND STORAGE
(IN CUBIC DECAMETRES)

FOR THE YEAR 1982

SOUTH SASKATCHEWAN RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	132 000	131 000	178 800	319 000	448 000	1 160 000	815 300	204 000	134 000	235 000	199 000	185 000	4 141 200
CONSUMPTIVE USE	-1 200	-1 200	100	3 800	123 800	218 000	180 000	189 700	130 300	24 000	-31 800	-700	834 800
CHANGE IN RESERVOIRS	-100 500	-58 200	-23 200	-13 400	44 800	313 300	162 700	34 600	51 600	-6 800	-71 600	-108 900	224 400
DIVERSION FROM BASIN	0	0	0	0	10 200	33 600	39 000	35 300	25 500	23 000	6 800	0	173 400
NATURAL FLOW ALTA. BDRY.	49 200	66 300	149 600	320 000	542 200	1 719 900	1 219 700	463 800	344 400	328 000	114 300	87 100	5 404 500

RED DEER RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED DISCHARGES	7 900	11 400	22 700	291 000	204 000	273 000	599 000	214 000	144 000	133 900	47 000	17 600	1 965 500
CONSUMPTIVE USE	0	0	0	0	0	0	0	0	0	0	0	0	0
DIVERSION FROM BASIN	0	0	0	0	10 200	-33 600	-39 000	-35 200	-25 500	-23 000	-6 800	0	-173 300
NATURAL FLOW ALTA. BDRY.	7 900	11 400	22 700	291 000	195 000	241 300	560 200	178 500	117 700	109 700	39 300	17 600	1 792 300

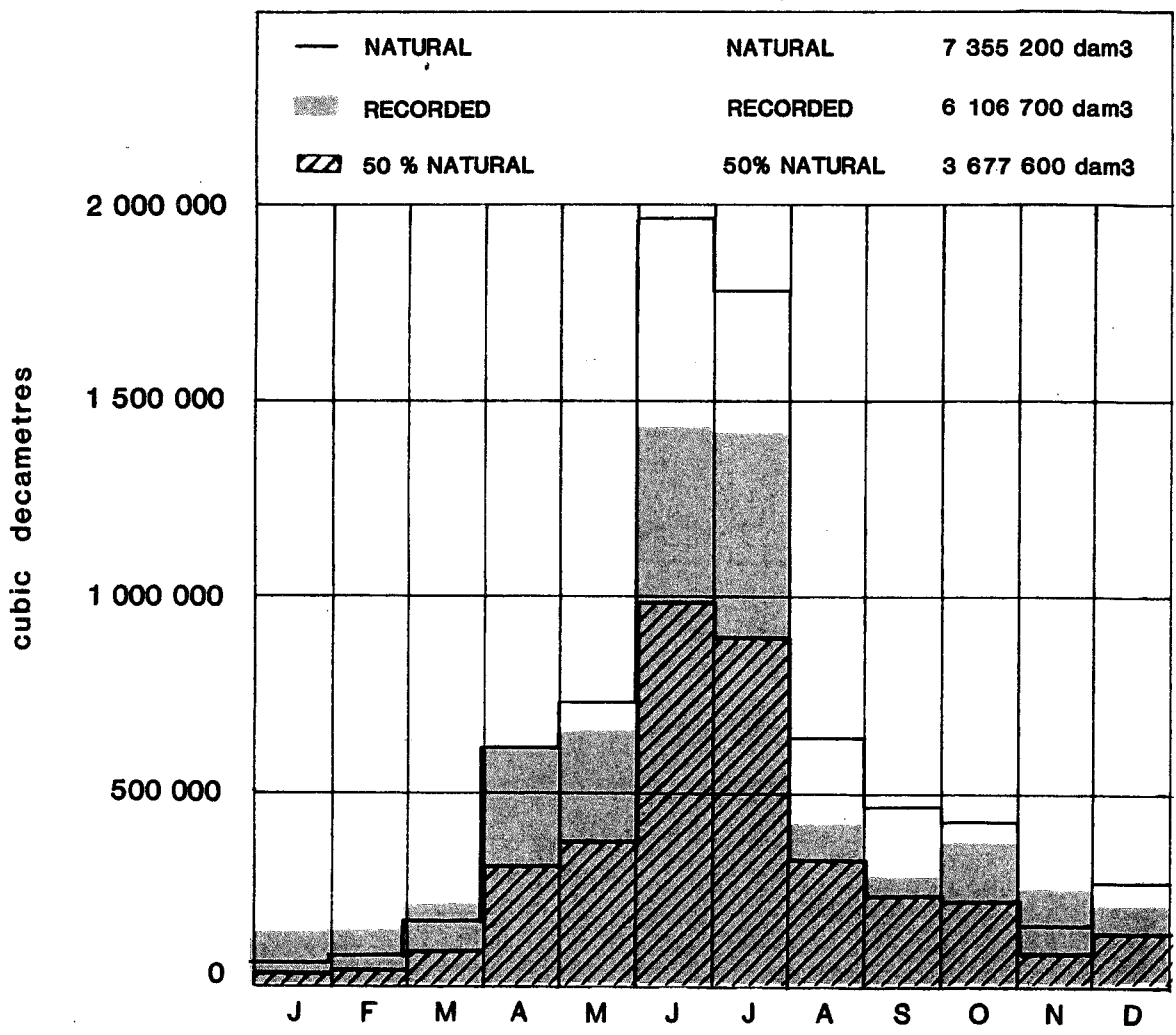
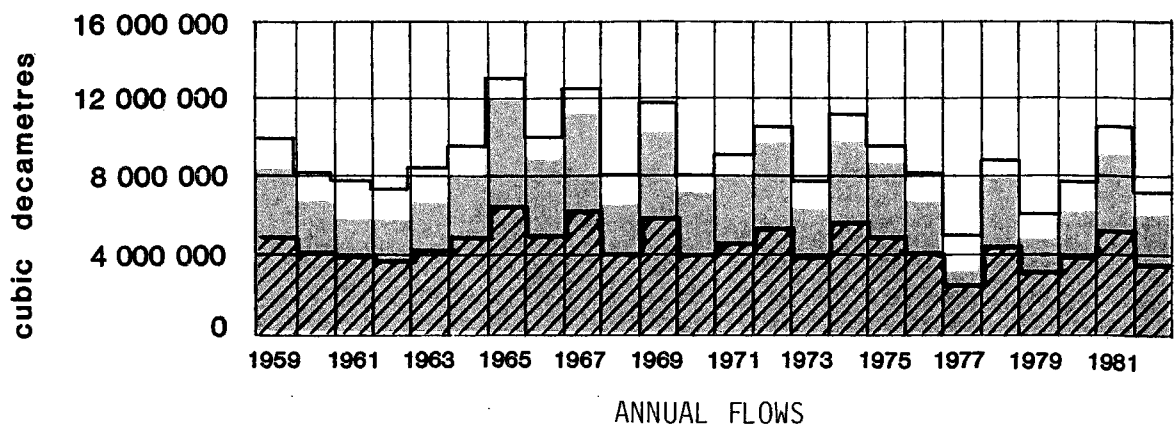
SOUTH SASKATCHEWAN RIVER -- BELOW JUNCTION WITH RED DEER RIVER

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED DISCHARGES	139 900	142 400	201 500	610 100	652 000	1 433 000	1 414 300	418 000	278 000	368 900	246 000	202 600	6 106 700
NATURAL FLOW	57 100	77 700	172 300	611 000	737 200	1 951 200	1 779 900	642 300	462 100	437 700	153 600	263 100	7 355 200

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

Natural flow 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.



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

1982 MONTHLY DATA

RECORDED AND NATURAL FLOWS - SUMMARY
 SELECTED INTERPROVINCIAL STREAMS CROSSING ALBERTA-SASKATCHEWAN BOUNDARY
 (CUBIC DECAMETRES ROUNDED TO THREE SIGNIFICANT FIGURES)

SUMMARY FOR THE YEAR 1982

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

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

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	275 000	233 000	257 000	696 000	764 000	744 000	2 070 000	572 000	489 000	521 000	332 000	327 000	7 280 000
NATURAL FLOW	5 320	33 900	56 000	549 000	716 000	1 170 000	2 470 000	985 000	714 000	495 000	175 000	103 000	7 470 000

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

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	5 740	4 250	4 770	64 200	99 600	46 900	36 000	32 100	15 300	14 300	7 570	6 230	337 000

BATTLE RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY (NEAR UNWIN)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	3 750	3 390	3 310	22 600	127 000	38 300	63 400	66 800	23 100	19 200	12 800	7 470	391 000

RECORDED AND NATURAL FLOWS - SUMMARY
 SELECTED STREAMS CROSSING THE SASKATCHEWAN -- MANITOBA BOUNDARY
 (CUBIC DECAMETRES ROUNDED TO THREE SIGNIFICANT FIGURES)
 FOR THE APPORTIONMENT PERIODS 1981-82 and 1982-83

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

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

RECORDED FLOW 1981-82	1 800 000	1 880 000	1 680 000	1 560 000	1 560 000	1 630 000	1 730 000	1 690 000	1 650 000	1 670 000	1 420 000	1 490 000	19 800 000
NATURAL FLOW	1 510 000	1 870 000	1 910 000	1 880 000	1 710 000	1 440 000	1 310 000	1 080 000	841 000	874 000	794 000	940 000	16 200 000
RECORDED FLOW 1982-83	1 240 000	1 370 000	1 610 000	1 250 000	1 290 000	1 290 000	1 200 000	1 560 000	1 880 000	1 860 000	1 620 000	1 720 000	17 900 000
NATURAL FLOW	911 000	1 470 000	2 270 000	2 150 000	2 120 000	1 990 000	1 570 000	1 280 000	1 360 000	1 360 000	1 190 000	1 240 000	18 900 000

SASKATCHEWAN RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY

RECORDED FLOW 1981-82 APPORTIONMENT FLOW	1 950 000	1 460 000	2 300 000	2 010 000	2 860 000	1 740 000	1 300 000	1 070 000	636 000	1 040 000	1 060 000	1 100 000	18 500 000
	2 100 000	1 410 000	3 320 000	2 970 000	3 310 000	1 630 000	1 050 000	759 000	107 000	395 000	387 000	412 000	17 800 000
RECORDED FLOW 1982-83 APPORTIONMENT FLOW	1 540 000	2 120 000	1 480 000	1 900 000	1 530 000	982 000	1 010 000	806 000	725 000	1 150 000	1 210 000	1 530 000	16 000 000
	1 850 000	2 770 000	2 260 000	3 260 000	2 010 000	971 000	1 000 000	399 000	451 000	628 000	528 000	1 080 000	17 200 000

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

RECORDED FLOW 1981-82	3 160	2 560	2 570	511	2520	4 180	9 970	14 400	8 570	4 140	2 570	4 370	59 500
NATURAL FLOW	3 590	4 110	6 330	7 070	7 450	113	0	0	0	0	0	1 070	29 700
RECORDED FLOW 1982-83	36 500	75 100	42 600	10 100	9 060	5 280	22 400	21 200	16 600	19 600	17 100	19 800	295 000
NATURAL FLOW	58 900	74 700	16 500	9 150	20 500	12 900	986	32	0	0	0	651	194 000

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

1981-82 RECORDED FLOW	42 900	51 100	19 500	26 700	14 100	7 700	42 900	21 000	6 060	2 080	875	898	236 000
1982-83 RECORDED FLOW	55 800	157 000	120 000	30 800	11 300	13 600	24 800	5 920	3 960	4 310	3 340	3 570	434 000

RED DEER RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (NEAR ERWOOD)

1981-82 RECORDED FLOW	28 900	25 000	9 380	11 100	6 340	1 740	27 400	17 700	1 380	424	170	363	130 000
1982-83 RECORDED FLOW	52 900	44 000	67 900	11 500	8 580	5 930	9 510	2 230	775	1 840	1 580	1 450	208 000

ASSINIBOINE RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (AT KAMSACK)

1981-82 RECORDED FLOW	12 200	4 680	3 850	3 350	1 730	316	3 750	4 220	1 660	575	375	917	38 000
1982-83 RECORDED FLOW	23 900	11 500	3 730	13 800	1 330	138	649	891	540	651	677	760	58 600

APPENDIX



APPENDIX INDEX

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PPWB MEMBERS

Chairman	Dr. W.B. Mountain	Assistant Deputy Minister Environmental Conservation Service Environment Canada
	Dr. H.M. Hill	Director General Prairie Farm Rehabilitation Administration Agriculture Canada
	Mr. R.E. Bailey (Oct/1969-Sept/1982)	Special Projects Director Alberta Environment
	Mr. P.G. Melnychuk (Appointed Oct/1982)	Assistant Deputy Minister Water Resources Management Service Alberta Environment
	Mr. S.R. Blackwell	Executive Director Water Management Service Saskatchewan Environment
	Mr. T.E. Weber	Director Water Resources Branch Manitoba Department of Natural Resources
<hr/>		
Secretary	Mr. G.W. Dunn	Water Quality Specialist PPWB Secretariat

ALTERNATE MEMBERS

Mr. D.A. Davis

*Regional Director
Western and Northern Region
Inland Waters Directorate
Environmental Conservation Service
Environment Canada*

Mr. A.F. Lukey

*Director
Engineering Branch
Prairie Farm Rehabilitation Administration
Agriculture Canada*

*Mr. P.G. Melnychuk
(Oct/1975-Sept/1982)*

*Assistant Deputy Minister
Water Resources Management Service
Alberta Environment*

Mr. D.L. MacLeod

*Director
Hydrology Branch
Water Management Service
Saskatchewan Environment*

Mr. N. Mudry

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

COMMITTEE ON HYDROLOGY

Terms of Reference

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

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

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
	D.L. MacLeod	Hydrology Branch Saskatchewan Environment
	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
	D.A. Fast	Water Pollution Control Branch Saskatchewan Environment
	P.G. Shewchuk	Standards and Approvals Division Alberta Environment
	M. Mowchenko (Acting Member)	Prairie Farm Rehabilitation Administration Agriculture Canada
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
	J.A. Gilliland	National Hydrology Research Institute Environment Canada
	D.H. Pollock	Prairie Farm Rehabilitation Administration Agriculture Canada
	H.A. Kerr	Earth Sciences Division Alberta Environment
	R.J. Stewart	Groundwater Division Saskatchewan Environment
	L. Gray	Water Resources Branch Manitoba Department of Natural Resources
Secretary	A.J. Chen	Operations Engineer PPWB Secretariat

COMMITTEE ON INTERJURISDICTIONAL AGREEMENTS ADMINISTRATION

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	Inland Waters Directorate Environment Canada
	T.K. Olson	Water Rights Branch Saskatchewan Environment
	A.J. Ferrett	Water Rights Branch Alberta Environment
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Secretary	A.J. Chen	Operations Engineer PPWB Secretariat

COMMITTEE ON WATER DEMAND

Terms of Reference

The Committee on Water Demand shall be composed of one member representing each of the Provinces of Alberta, Saskatchewan and Manitoba, two members representing Canada, and the Executive Director of the Prairie Provinces Water Board who shall be Chairman. The Committee shall function during the life of the Water Demand Study in the Saskatchewan-Nelson Basin and shall have the responsibility of providing technical guidance and financial management for the Water Demand Study on behalf of the Board.

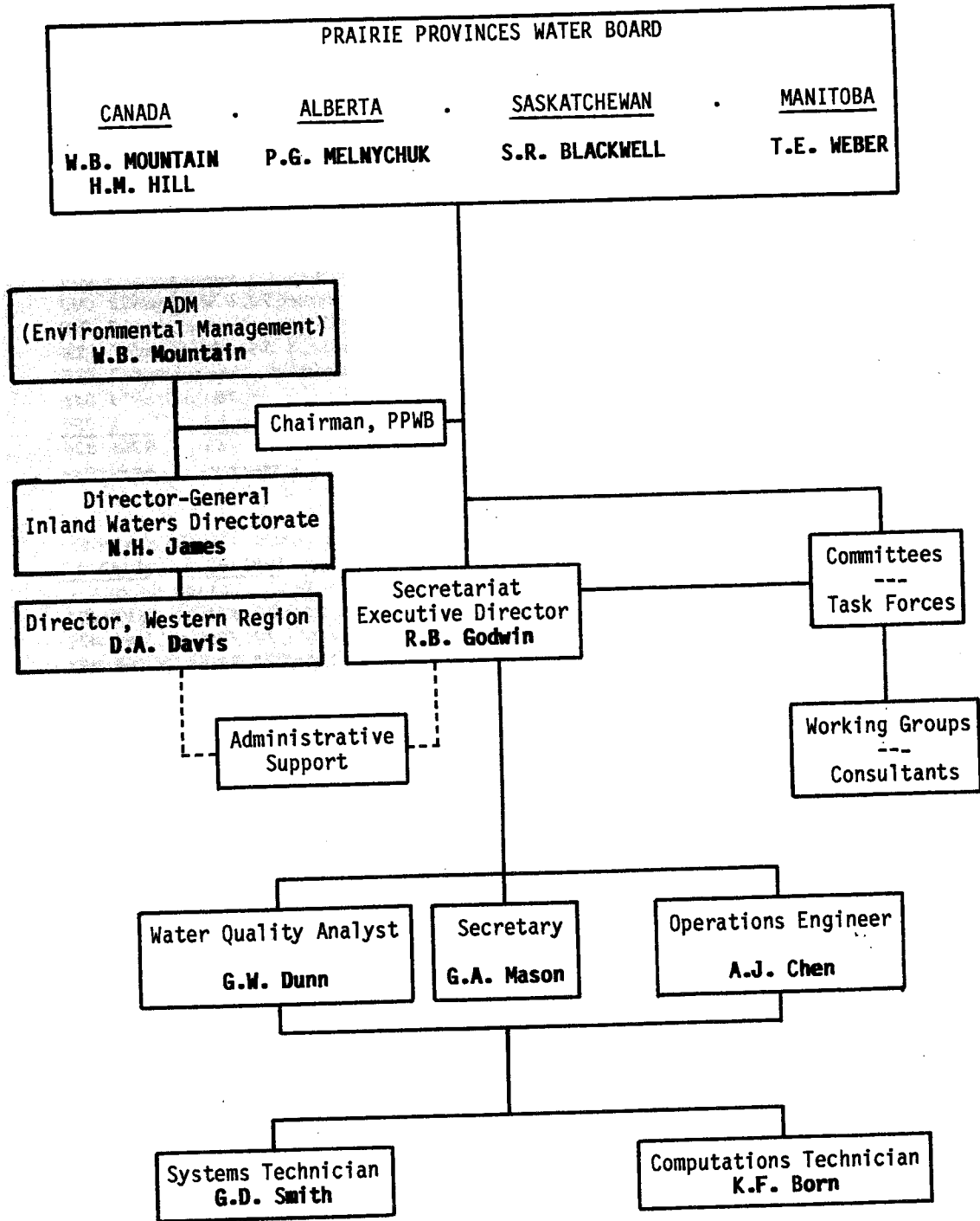
The Water Demand Study shall be divided into two parts. Part One shall be done under the auspices of the Prairie Provinces Water Board and consist of a study of water demand based on current needs and historical uses in accordance with the Terms of Reference for Part One. Part Two may be done at a later date and would provide estimates for future water demands. Throughout Part One of the study the Committee shall: monitor and oversee the technical and financial aspects of the study as directed by the Board; ensure that there is no duplication of studies; report regularly to the Board on the progress of the study.

Members

Chairman and Secretary	R.B. Godwin	Executive Director Prairie Provinces Water Board
	H. Foerstel	Water Planning and Management Branch Environment Canada
	V.M. Austford	Water Resources Branch Manitoba Department of Natural Resources
	J.E. Forais	Environmental Assessment Secretariat Saskatchewan Environment
	C. Primus	Planning Division Alberta Environment
	B.T. Abrahamson	Prairie Farm Rehabilitation Administration Agriculture Canada

ORGANIZATION CHART

ORGANIZATION CHART



STATEMENT OF EXPENDITURES

	FINAL CLAIMS		
	<u>1980-81</u>	<u>1981-82</u>	<u>1982-83</u>
Salaries	\$222 961	\$245 689	\$210 458
Travel and Transportation	21 011	18 624	15 777
Postage, Freight and Express	475	671	1 069
Telephone and Telegraph	6 275	7 318	5 921
Professional and Special Studies	157 062	56 987	20 552
Computing Services	13 673	18 027	15 793
Stenographic and Typing Services	5 223	663	802
Miscellaneous Special Services	---	---	5 034
Accommodation Rental	12 000	12 000	12 000
Computer Equipment Rentals	742	---	7 365
Photocopying and Other Equipment Rentals	24 508	73 040	28
Furniture, Fixtures and Office Equipment	123	---	1 076
Stationery, Printed Matter & Office Supplies	3 463	3 703	74 047
Miscellaneous	719	63	1 056
	<u>\$468 235</u>	<u>\$436 785</u>	<u>\$368 826</u>
	=====	=====	=====

Final Claim includes Water Demand Study expenditures.

<u>Shares:</u>	<u>1980-81</u>	<u>1981-82</u>	<u>1982-83</u>
Canada: one half	\$234 118	\$218 391	\$184 413
Alberta: one sixth	78 039	72 798	61 471
Manitoba: one sixth	78 039	72 798	61 471
Saskatchewan: one sixth	78 039	72 798	61 471

Previous Board Expenditures

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

FINAL CLAIM

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

FINANCIAL YEAR 1982-83

	<u>SECRETARIAT</u>	<u>WATER DEMAND STUDY</u>	<u>TOTALS</u>
1. Salaries	\$182 256	\$ 28 202	\$210 458
2. Travel and Transportation	11 562	4 215	15 777
3. Postage, Freight and Express	392	677	1 069
4. Telephone and Telegraph	4 909	1 012	5 921
5. Professional and Special Services	12 000	8 552	20 552
6. Computing Services	14 422	1 371	15 793
7. Stenographic Services	401	401	802
8. Miscellaneous Special Services	422	4 612	5 034
9. Accommodation Rental	12 000	---	12 000
10. Computer Equipment Rentals	7 365	---	7 365
11. Photocopying and Other Equipment Rentals	28	---	28
12. Furniture and Fixtures	-1 076	---	-1 076
13. Stationery, Printed Matter and Supplies	12 738	61 309	74 047
14. Miscellaneous	982	74	1 056
	<u>248 401</u>	<u>\$100 425</u>	<u>\$368 826</u>
	=====	=====	=====

Each Province's Share of Expenditures (one-sixth) = \$61 471.

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.

Original signed by R.B. Godwin

Executive Director
Prairie Provinces Water Board

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

Original signed by D.A. Davis

D.A. Davis
Regional Director
EMS - Environment Canada

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

6. This agreement shall not adversely affect any right to water in Battle or Lodge Creeks which has been given by the Government of Canada prior to the transfer of the natural resources to the Provinces and is still subsisting, or any right to such water given by either Province heretofore which has been recognized and approved by both Provinces.
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

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.

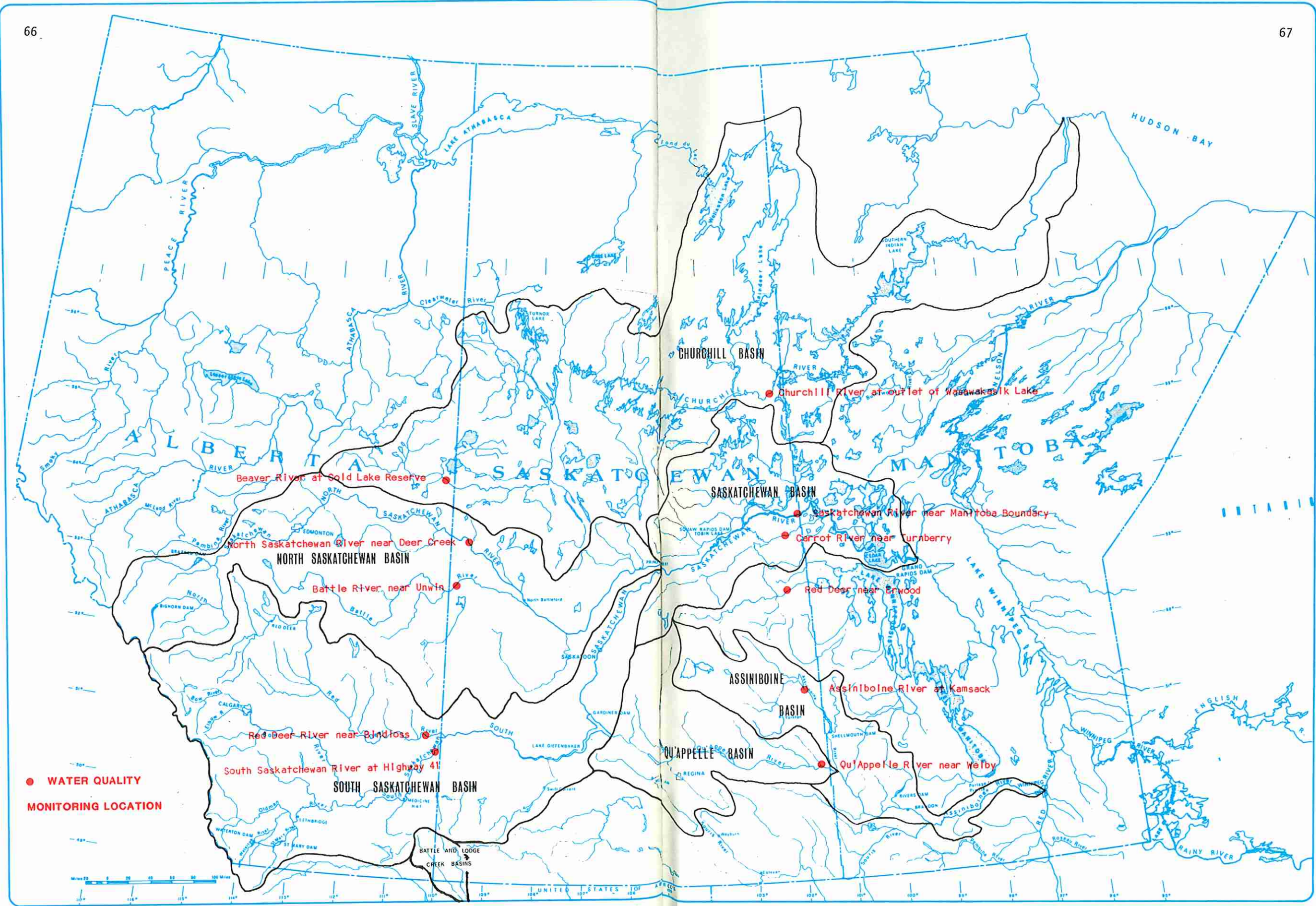
Approved at PPWB Meeting No. 5
- November 2nd, 1971

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.

MAP





● WATER QUALITY
MONITORING LOCATION

