CANADA - SASKATCHEWAN
MEMORANDUM OF AGREEMENT
FOR
WATER QUANTITY SURVEYS
ANNUAL REPORT 1983-84

AUGUST 1984

TO: Mr. S.R. Blackwell
Administrator for Saskatchewan

Mr. D.A. Davis
Administrator for Canada

In accordance with Article XII of the Memorandum of Agreement for Water Quantity Surveys in the Province of Saskatchewan, signed February 18, 1975, we submit herewith the annual report for fiscal year 1983-84.

Saskatchewan

N.E. Parsons
Saskatchewan Environment

Canada

J.G. Way
Environment Canada

Members
Saskatchewan Co-ordinating Committee

August, 1984

Regina, Saskatchewan

EXECUTIVE SUMMARY

The Canada/Saskatchewan Co-ordinating Committee met three times during the report year. Several program activities were highlighted during these meetings. These included: appointment of Mr. J.G. Way, Acting Regional Chief, WRB as the member for Canada; reduction in provincial construction funding for 1983-84; network planning aspects; federal remote DCP program; installation by WRB of a mini-computer; and, implementation of the guidelines for hydrometric station designation. Frequent contact was maintained between the members of the Committee and senior staff of both agencies during the year.

The 1983-84 program was completed satisfactorily following below normal flows in much of Saskatchewan during the spring of 1983. Heavy thundershower activity in June and July caused local flooding in southern areas and produced unseasonably high flows in the Qu'Appelle, Wascana and Assiniboine basins. Six water level encoders were purchased by SDOE for use with the provincial DCPs. Two DCPs were purchased by the National Weather Service and installed in the lower Souris River basin prior to the 1984 spring runoff. A precipitation bucket survey was conducted on the portion of the June, 1983 storm which affected the Strasbourg area. Data computations were completed as scheduled for publication.

Maintenance of the hydrometric network was carried out at 70 sites while station upgrading occurred at an additional 8 sites. The evaporation station near Consul was relocated and construction of 3 standard in-bank gauging stations and 1 California-type gauging station were completed for PFRA near Swift Current. The safety inspection program of cableways within Saskatchewan was completed.

The federal share of 1983-84 program costs was $731 735; the provincial share was $407 649. A provincial deficit carryover of $962 from 1982-83 and a 1983-84 payment of $406 605 results in a provincial deficit of $2 006 for 1983-84 operations. The Schedule D costs for the 1984-85 fiscal year are estimated at $428 000.

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1.0 INTRODUCTION

This is the ninth annual report summarizing the activities of the Canada/Saskatchewan Co-ordinating Committee established by the Memorandum of Agreement for Water Quantity Surveys in 1975. The Agreement, along with Schedules A, B, C and D which detail operational, administrative and cost sharing arrangements, is included as Appendix III. The report contains brief summaries from the three Co-ordinating Committee meetings convened during the fiscal year ending March 31, 1984 as well as a summary of surface water conditions, hydrometric operations, construction activities and hydrometric network changes which occurred during the year.

Details of the cost-sharing for 1983-84 are provided in the report. The federal share of 1983-84 program costs was $731 735; the provincial share was $407 649. A provincial deficit carryover of $962 from 1982-83 and a 1983-84 payment of $406 605 results in a provincial deficit of $2 006 for 1983-84 operations. The costs for the 1984-85 fiscal year are estimated at $428 000 in Schedule D.

2.0 SUMMARY OF ACTIVITIES

2.1 Canada/Saskatchewan Co-ordinating Committee Meetings

The Canada/Saskatchewan Co-ordinating Committee on the Hydrometric Agreement met three times during the report year, on August 31, 1983, November 1, 1983, and February 20, 1984. Both routine and specific issues of mutual interest were discussed at these meetings. The highlights are summarized in the following sections.

2.1.1 Co-ordinators' Meeting - August 31, 1983

The meeting was attended by Mr. N.E. Parsons, the member for Saskatchewan, Mr. R.A. Halliday, the member for Canada, Mr. D.L. MacLeod, Saskatchewan Environment (SDOE), Mr. J.G. Way, Water Resources Branch (WRB), and Mr. R. Herrington, WRB.

It was noted at this time that Mr. Halliday would be assuming the responsibilities of Chief, Water Planning and Management Branch, Inland Waters Directorate, Regina during the period September 6, 1983 to December 31, 1984. Mr. Way, Acting Regional Chief, WRB, Regina, would be designated the member for Canada during this period.

The financial outlook for 1983-84 was discussed at this meeting. SDOE indicated that the department is considering methods of reducing 1983-84 program costs and requested that WRB limit construction this year to $25 000. Costs in Schedule D for 1984-85 were estimated at $378 000 for operations and maintenance and $50 000 for capital.

Network planning was discussed and WRB indicated that the completion of station profiles was a high priority. However, budgetary constraints would restrict significant network expansion at this time.

Problem stations were identified and several future potential sites suggested.

It was noted that the new Guidelines for Station Designation would take effect April 1, 1984. Both agencies agreed to review Schedule A and discuss the conversion of these station designations at a subsequent meeting.

WRB confirmed federal contract agreements for the purchase of 70 data collection platforms (DCPs) to be installed in 1983-84 by WRB at remote stations across Canada. WRB Saskatchewan would receive 6 of these units. A requirement for a provincial Working Group on Telemetry was identified by the Co-ordinating Committee members and it was agreed that terms of reference would be developed by WRB.

Plans were confirmed by WRB that a mini-computer would be installed by April 1984. A proposal to SDOE would come forward from the National Committee concerning the cost sharing arrangements.

Other items discussed at this meeting included: a proposed data users' workshop; the Lake Diefenbaker sedimentation study; ISO standards; and, equipment purchasing and replacement.

2.1.2 Co-ordinators' Meeting - November 1, 1983

The meeting was attended by Mr. N.E. Parsons, the member for Saskatchewan, Mr. J.G. Way, the member for Canada, and Mr. R. Herrington, WRB. The purpose of the meeting was to discuss station designations for 1984-85 Schedule A. Previous to this meeting, SDOE had examined the designations of provincial and federal-provincial stations in the 1983-84 Schedule A and WRB had examined federal and federal-provincial stations. Clarification leading to appropriate designation of all stations within the Saskatchewan network was required for only a few stations at this time.

2.1.3 Co-ordinators' Meeting - February 20, 1984

The meeting was attended by Mr. N.E. Parsons, the member for Saskatchewan, Mr. J.G. Way, the member for Canada, and Mr. R. Herrington, WRB. Items discussed during this meeting included financial concerns, telemetry, hydrometric equipment, hydrometric network changes, construction activities, network evaluation, and the WRB mini-computer installation.

The five-year WRB remote DCP installation plan was discussed as well as existing and proposed telemetry installation at conventional access stations. It was noted that training of WRB hydrometric staff on the "new generation" of DCPs had been provided during the year. The terms of reference for the Saskatchewan Working Group on Telemetry were to be developed and a meeting of interested agencies was suggested for 1984.

It was agreed that the changes to the hydrometric network for 1984-85 would again be limited. Decisions taken with respect to the proposed work program were as follows: no new construction in the Frenchman River basin because an SDOE study would be undertaken in 1984-85; the proposed new station on Reindeer River at Devil Rapids would not be scheduled for 1984-85; WRB agreed to monitor the filling of Codette Reservoir in late 1984 once an operating plan is submitted by Saskatchewan Power Corporation; SDOE would evaluate the Bad Lake stations with a view to the possibilities of discontinuing stations; SDOE would verify the requirement for upgrading Pipestone Creek near Moosomin and for constructing a station on Echo Creek near Fort Qu'Appelle; WRB would assume operational responsibility for Wascana Creek below Kronau Marsh; no decision had been reached on the future

requirements of the SSEWS project network of stations; the cabin at Porter Lake, which was destroyed by fire, would not be replaced as the federal-provincial interest in data from Porter Lake is minimal; and, WRB agreed to monitor Fife Lake overflows into Girard Creek on a miscellaneous basis. It was agreed that changes to Schedule A for 1984-85 would be as follows:

Stations to be added

None

Stations to be deleted

05KH008 Saskatchewan River near Manitoba Boundary (F2)
(discontinued station)
11AB113 Middle Creek Reservoir Main Outlet (F3)
(station no longer required for apportionment purposes)
06BC002 Porter Lake at Crew Cabin (FP3)
(cabin destroyed by fire in 1983)

Operational Changes

The following station has changed operation from SDOE to WRB:
05JF012 Wascana Creek below Kronau Marsh (FP2)

Station Name/Number Changes

06CA005 Montreal Lake near Molanosa (FP2)
to
06CA006 Montreal Lake near Weyakwin
(station relocated)

05JF002 Wascana Lake at Marina (FP2)
to
05JF015 Wascana Lake at Marina
(error in station number)

05KB002 Sturgeon-Weir River at Outlet Amisk Lake (FP3)
to
05KG002 Sturgeon-Weir River at Outlet Amisk Lake
(error in station number)

05HH004 Wakaw Lake near Wakaw (P1)
to
05KA012 Wakaw Lake near Wakaw
(error in station number)

WRB provided an update on the mini-computer proposal. The system should be installed by March 31, 1984 and operational by June, 1984. Details of the cost sharing formula had yet to be presented.

SDOE indicated that they were optimistic about the prospects of evaluating provincial satellite stations within the next fiscal year. At the same time, WRB would undertake preparation of some 100 hydrometric station profiles. Sediment network planning had been ongoing and is a high-priority for 1984-85.

The Committee also discussed other items such as the 1984-85 Schedule D, bucket surveys, the federal Water Enquiry, and the proposed Saskatchewan Water Corporation.

2.2 Operational Considerations

2.2.1 Surface Water Conditions

Following above-normal temperatures and completion of spring runoff in April 1983, southern Saskatchewan experienced record low temperatures and two snow storms during May. The first storm deposited 15-25 cm of snow in an area extending from the Cypress Hills to Saskatoon, while the second storm produced 25-50 cm in southeast Saskatchewan. June was sunny and warm with very heavy isolated showers and local flooding reported in southern areas. A severe storm occurred over an area extending from Saskatoon to Yorkton during this month. A series of heavy thunderstorms in July maintained unseasonably high flows in the Qu'Appelle, Wascana and Assiniboine basins. Damages estimated at $10M were reported in Regina as a consequence of the July 9 storm.

The Village of Pennant, northwest of Swift Current, sustained tornado damage. Precipitation throughout the rest of the report year was generally below normal and resulted in below normal winter accumulations in spite of an early November snowfall. August was one of the hottest months on record, while December was extremely cold. The generally mild weather in the January - March period resulted in the loss of a light snowpack with very little runoff.

2.2.2 Hydrometric Operations

Field work and computations were completed as scheduled during the year in spite of some organizational changes to WRB. A new Acting Regional Chief was acquired, vacant supervisor and technician positions were staffed during this period and new interactive computation procedures were implemented in the district. The three-year rotation of field staff to new responsibility areas also occurred at this time. At the end of the fiscal year, one engineering and one technical clerk position were still vacant.

The WRB Saskatchewan District was allocated two positions under the federal Career Oriented Student Employment Program (COSEP). These two summer students carried out a number of field and office tasks, freeing up full time staff for computations and maintenance of gauging stations. Accounting of COSEP activities within the cost sharing agreement is contained in the calculation of shareable costs.

Six water level encoders were purchased by WRB on behalf of SDOE during the year. These will be installed in 1984 to replace the old encoders used with SDOE's DCPs.

Two DCPs were purchased by WRB on behalf of the United States National Weather Service (NWS) during the year and installed in the lower Souris River basin at Moose Mountain Creek near Oxbow and Souris River near Roche Percee prior to the 1984 spring runoff. These provided real-time information about runoff in the upper Souris to SDOE as well as to the NWS.

DCPs were also installed at Altawan Reservoir near Govenlock and Middle Creek near the Saskatchewan Boundary to assist in monitoring flows for international apportionment. A DCP installed at a site in the Pasquia Hills area will serve as an index of runoff characteristics in that region. Additional needs for real-time data have been identified in the province for the future. Six DCPs purchased by WRB in 1983-84 under the national remote station program will be installed in mid-1984. As of March 31, 1984, there were 13 active DCPs operated by WRB Saskatchewan. Quarterly reports on the status of the DCP network in the province were provided during the year.

A precipitation bucket survey action plan for Saskatchewan was implemented during the year. The plan is a co-operative venture between SDOE, WRB, Atmospheric Environment Service (AES) and Prairie Farm Rehabilitation Administration (PFRA) and is designed to supplement the data from climatological and first-order weather observing stations. This information is of

interest to agencies responsible for monitoring floods and designing water resources structures. In response to significant summer precipitation events, a bucket survey crew is dispatched to the area to obtain additional information on the amount and distribution of precipitation. A survey was conducted on the portion of the June 24, 1983 storm which affected the Strasbourg area, 70 km north of Regina. This initial survey provided valuable experience needed for fine tuning the action plan. As a result, a review of the bucket survey criteria is underway.

A limited snow survey program has been conducted by the WRB in Saskatchewan since 1962 in the Carrot River, Eagle (Eaglehill) Creek and Spruce River basins. During the period 1962-83 many changes in location have occurred in the snow courses. Since the original purpose of the surveys has been obscured, it was decided to evaluate the future of this program. Identified users and potential users were contacted to determine their level of interest. Since no interest was expressed in retaining these courses, they were accordingly discontinued prior to the 1984 spring runoff.

Continued financial and field personnel support was provided to the Canada/United States gamma snow survey program during the fiscal year. This program has been in existence since 1981 and is designed to evaluate the potential for predicting runoff from snowmelt utilizing natural gamma radiation. In spite of the low snowpack in southern Saskatchewan this past winter, field surveys were conducted during February 1984. The results of these surveys will determine the future direction of this program.

WRB personnel provided instruction in field and office procedures to two hydrometric staff from SDOE during the year. This will result in a more thorough understanding of WRB practices and standards and will be of direct benefit to SDOE in their collection and interpretation of hydrometric data prior to publication.

During the year WRB personnel inspected 28 manual gauging stations operated by SDOE and made recommendations for improvements to the stations. It is planned to inspect the remaining 19 stations in 1984-85.

2.2.3 Construction Activities

No expansion of the hydrometric network operated by WRB occurred during the report period. The construction program consisted entirely of maintenance and upgrading activities designed to improve record quality and to reduce the associated effort and cost. Maintenance was carried out at 70 stations while upgrading occurred at an additional 8 stations. Two special projects were also completed. These included the relocation of an evaporation station near Consul and the construction for PFRA of 3 standard in-bank gauging stations and 1 California-type gauging station near Swift Current.

The construction crew was assembled in late May. As usual, construction priorities were modified throughout the season, in response to additions to the program. As a result, some of the construction projects were not completed as scheduled.

Vandalism still remains a problem with most of the damage being caused by high-powered rifles and shotguns. No simple solutions are apparent.

The construction program included installation of the following:

Shelters

a) 2 - new wired
b) 1 - exchanged with wired one
c) 2 - salvaged
d) 1 - wired in place

Stilling Wells

a) 4 - wood stave of various lengths.

Artificial Controls

a) 3 - new steel sheet piling controls
b) 6 - new rock and gravel controls
c) 2 - rock controls repaired

Cableways

a) 1 - new
b) 1 - removed
c) 6 - rebuilt with steel A-frames
d) 3 - repaired

The safety inspection program of 61 cableways within the Saskatchewan District, has been completed. All unsafe cableways have been rebuilt with the exception of the one at Birling Creek near Paynton. Rebuilding is pending an evaluation by SDOE of the needs for continuing operation of this station. A program to replace deteriorated wooden A-frames with steel ones will continue as the safety of structures is of paramount importance. This program will ultimately lead to decreased maintenance costs.

Electrical service was installed at three sites during the construction season, bringing the total number of sites with

power to 165. This program will continue in future years where feasible as heating stilling wells in the spring significantly improves record recovery.

A special project established in 1982 to test the stability of a variety of bench marks continued. It now appears that the screw-type bench mark may be most suitable in boggy soil however, testing under this project will continue.

Several electric tape gauges were installed at gauging stations during the year. This instrument has proven successful, especially for sites with deep stilling wells, and further installations are planned.

Construction expenditures during 1983-84 were $99 547 (federal) and $36 646 (provincial). Details of the construction program are documented in the 1983-84 Saskatchewan Construction, Upgrading and Maintenance Annual Report.

2.3 Network Development

2.3.1 Network Changes for 1983-84

Schedule A of the Memorandum of Agreement is reviewed by the Co-ordinating Committee annually. The Schedule identifies the operational and financial responsibility for all stations that are active on April 1 of each year. Network changes from the preceding year (1982-83) as the result of changing responsibility of operation, additions to or deletions from the active network were as follows:

Stations Added

11AE016 Fife Lake near Lisieux (P)

Stations Deleted

05NG024 Pipestone Creek near Saskatchewan Boundary (F)
(station relocated to Manitoba)

Operational Changes

The following station has changed operation from SDOE to WRB:

05HD028 Lac Pelletier near Vesper (P)

Station Name/Number Changes

05MB011 Patten Creek near Kuroki (P)
to
05MB011 Van Pattens Creek near Kuroki

05HH003 Duck Lake Creek near Rosthern (FP)
to
05HH003 Kohleschmidt Creek near Rosthern

05JK005 Mosquito Creek near Vanguard (FP)
to
05JB007 Mosquito Creek near Pambrun

07LA002 Geikie River below Wheeler River (F)
to
06DA004 Geikie River below Wheeler River

07LA003 Wheeler River below Russell Lake (FP)
to
06DA005 Wheeler River below Russell Lake

In addition to the above changes, the following 21 provincial lake stations have been added to Schedule A as Operated by Saskatchewan and the data will be published by WRB if they meet national standards:

05EG010 Brightsand Lake near St. Walburg
05GD003 Redberry Lake near Krydor
05GF003 Sturgeon Lake near Prince Albert

05GF004 Shell Lake near Shell Lake
05HH004 Wakaw Lake near Wakaw
05KA011 Lenore Lake near Middle Lake
05KE009 Lower Fishing Lake on the Hanson Lake Road.
05KF002 Little Bear Lake on the Hanson Lake Road.
05KF003 Deschambault Lake on the Hanson Lake Road.
05KG009 Pelican Lake at Pelican Narrows
05KG010 Jan Lake near the Hanson Lake Road
05LB012 Marean Lake near Chelan
05MA024 Ranch Lake near St. James
05MB014 York Lake near Yorkton
06AD014 Makwa Lake near Loon Lake
06AE003 Morin Lake near Victoire
06AE004 Delaronde Lake near Big River
06AF009 Lac Des Iles near Goodsoil
06AF010 Greig Lake near Dorintosh
06AG003 Dore Lake at Dore Lake

The net effect of these network changes is to decrease the number of station units by 0.75 as indicated in Table 1 as Fife Lake and Lac Pelletier were approved jointly by SDOE and WRB subsequent to April 1, 1982 and were used in the station unit determination in the 1982-83 annual report. The change to the Saskatchewan network as of April 1, 1983 is indicated in Figure 1 while a summary of 1983-84 station changes and a comparison with 1975-76 station data are presented in Appendix II.

2.3.2 Historical Network Changes

The historical development of the Saskatchewan hydrometric network and the annual increase in the data base are shown in Figures 2 and 3. These figures illustrate the rapid increase in the acquisition of hydrometric data since the 1950s and the relative stability of the network during the last few years.

Although the number of hydrometric stations operated within Saskatchewan during the last ten or twelve years has been relatively constant, network planning is not dormant. Changes to

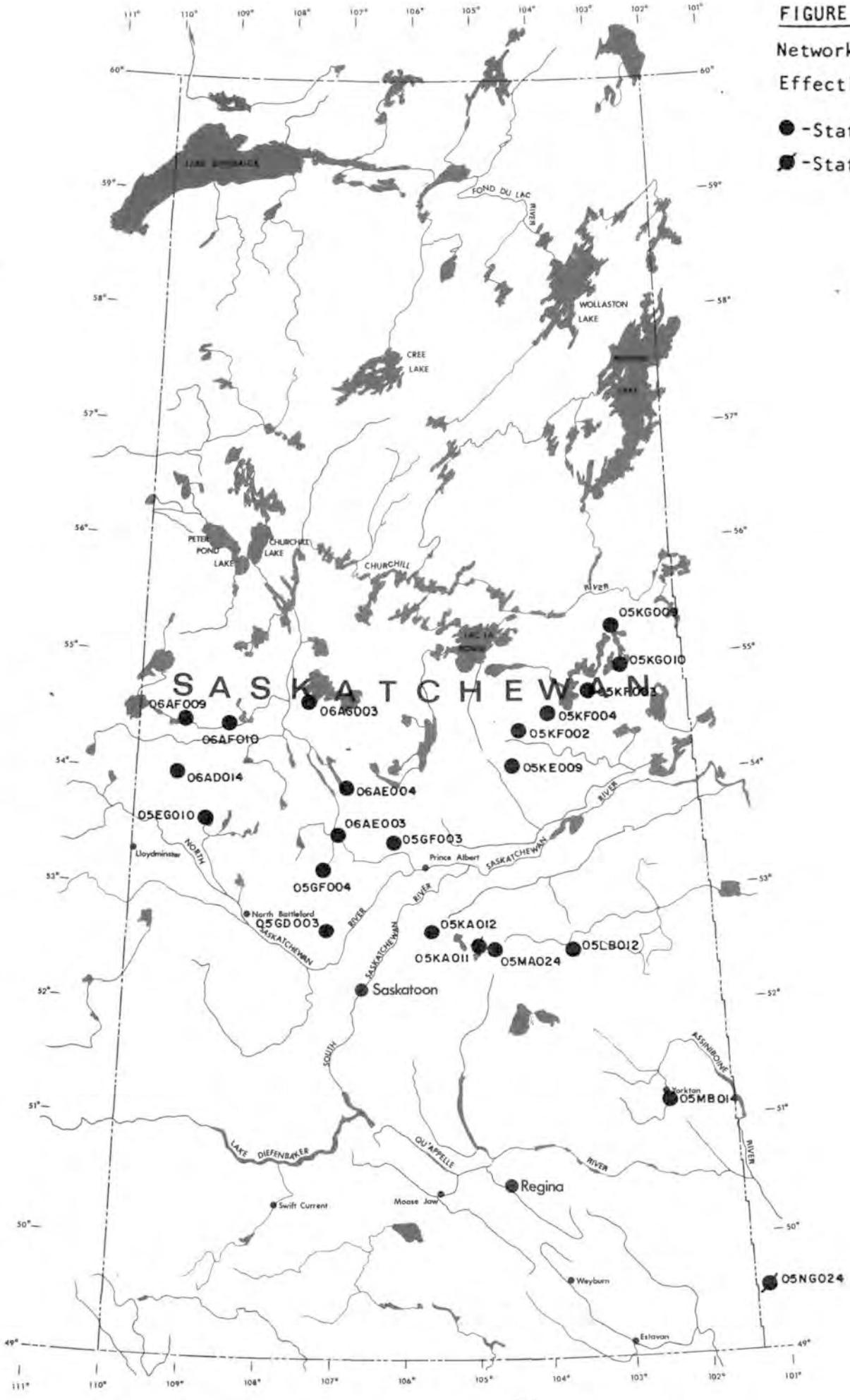

FIGURE 1

Network changes

Effective April 1, 1983

● -Stations added

● -Stations deleted

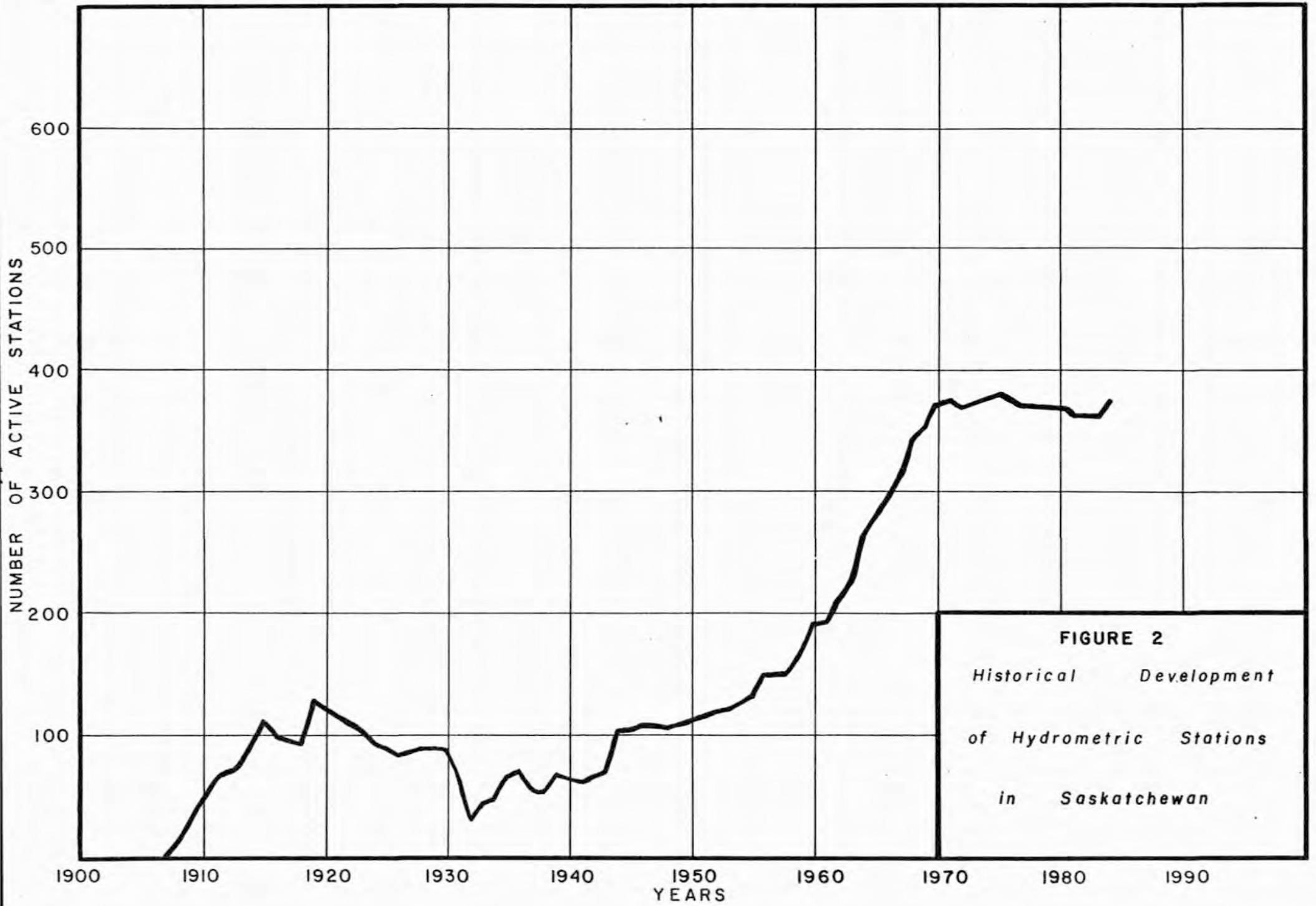

FIGURE 2

Historical Development of Hydrometric Stations in Saskatchewan

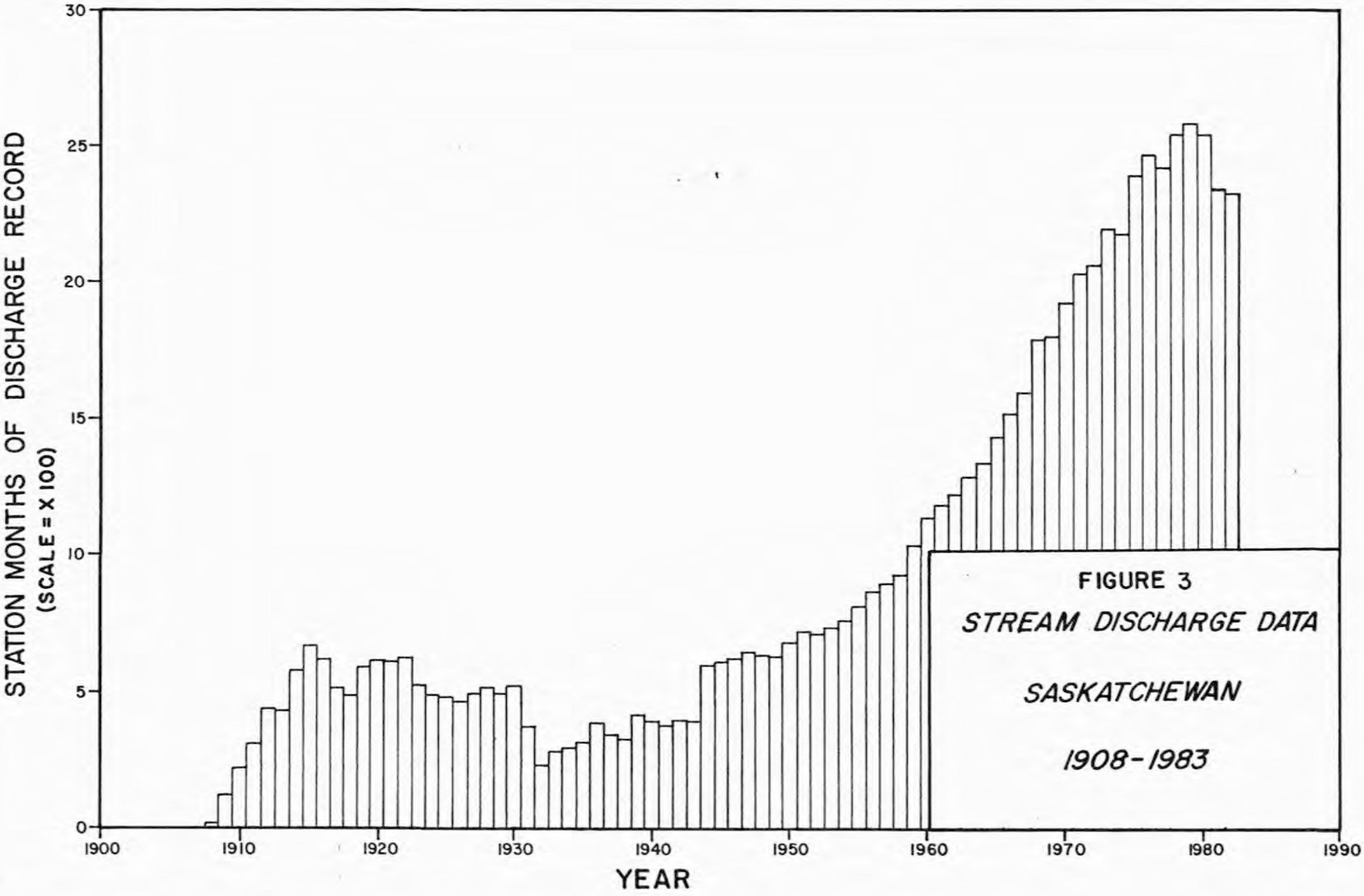

FIGURE 3

STREAM DISCHARGE DATA

SASKATCHEWAN

1908-1983

the network have occurred and will continue to occur in response to perceived needs and priorities, as well as other factors. These changes are well illustrated from the inception of the cost sharing agreement in the following:

Year	Stations Added*	Stations Deleted
1975-76	52	6
1976-77	11	4
1977-78	6	8
1978-79	10	3
1979-80	0	1
1980-81	3	11
1981-82	2	2
1982-83	1	3
1983-84	22	1
Total	107	39

* Includes all stations from Schedule A other than contributed data.

The stations added to Schedule A over this eight year period represent approximately 28% of the hydrometric network operated by WRB and SDOE as of April 1, 1983, and the stations deleted from the Schedule represent 10% of the network.

In addition to the 146 stations which have been added to or deleted from the network, many station designation changes have also occurred during the period. In general, there has been a significant decrease in the number of federal stations and a large increase in provincial stations. The federal stations represented 52% of the total network in 1975-76 and 37% in 1983-84 while the provincial classification represented 16% in 1975-76 and 34% in 1983-84. The main reason for this change is that a review of the Federal interest in the hydrometric network indicated that there was no longer interest in a large number of

Federal stations and the province assumed financial responsibility for these stations. Also, since the inception of the Agreement, the requirements for additional stations have mainly been of a provincial nature for regional water resource inventory and studies, water rights, and flow forecasting. Figure 4 illustrates the changing nature of designated responsibility of the hydrometric network operated by WRB since the inception of the cost sharing agreement.

3.0 COSTS OF OPERATION

3.1 Derivation of Station Units

The calculation of station units (Table 1) is derived from Schedule A of the Memorandum of Agreement which lists the hydrometric network stations existing and operating as of April 1, 1982. Provincial stations operated by SDOE and published by WRB are not considered as these stations are not included for costing purposes (Memorandum of Agreement Article V (b)).

Total operational costs of hydrometric stations vary significantly with the period of operation, i.e. seasonal or continuous, and with the type of data produced, i.e. stage only or stage and discharge. Weighting factors to account for these differences and to convert stations to station units have been assigned as follows:

8 month water level station (8L) = 0.25
12 month water level station (12L) = 0.40

8 month flow station (8Q). = 0.75
12 month flow station (12Q) = 1.00

These factors are used by the four WRB offices within the Western & Northern Region and apply to normal, remote and international stations.

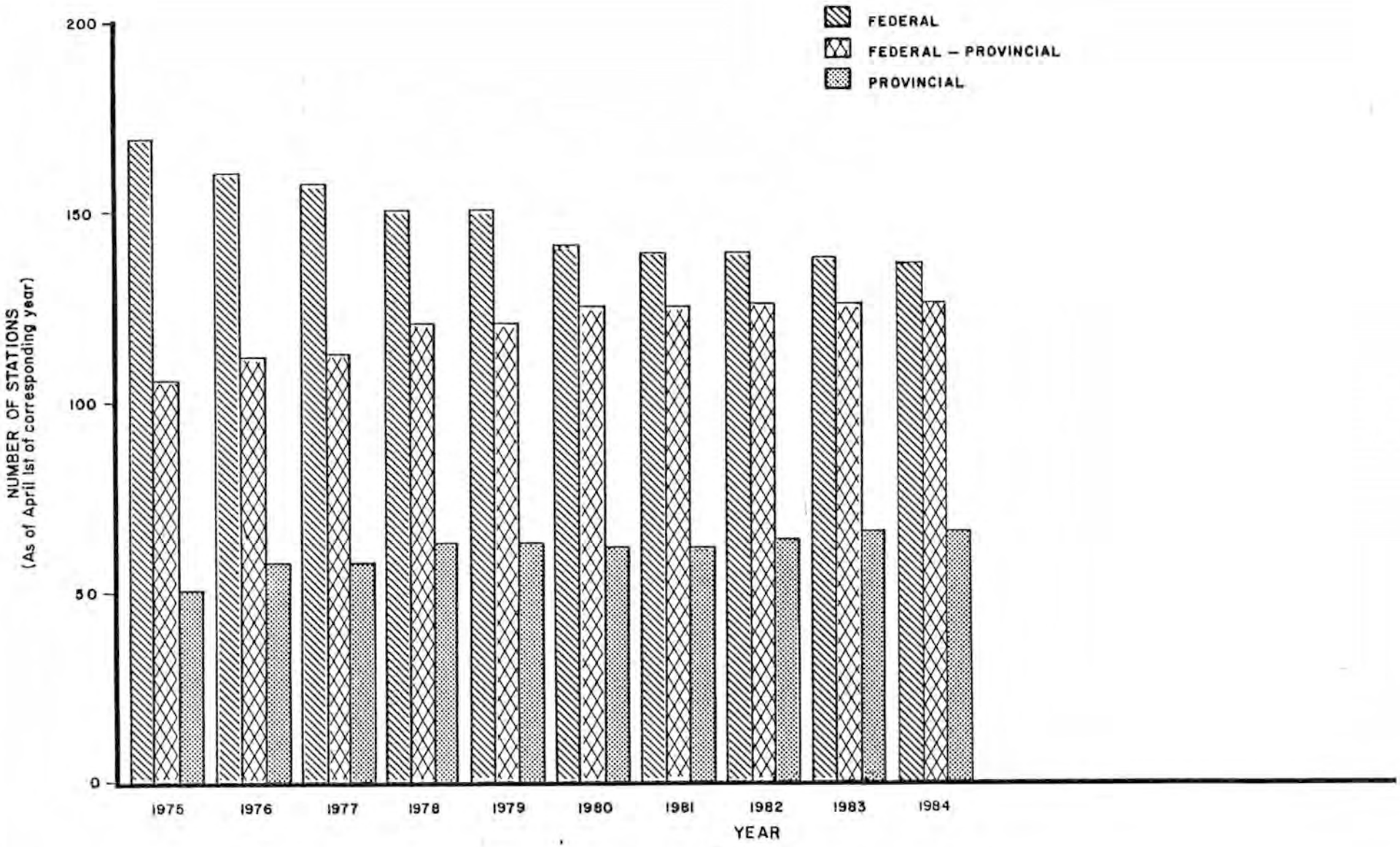

FIGURE 4
DESIGNATED RESPONSIBILITY FOR STATIONS
IN SASKATCHEWAN NETWORK
(Graph only includes those stations operated by Water Survey of Canada)

3.2 Costs of Operation:1983-84

Station unit costs and total network costs for salary, operations and maintenance and capital for 1983-84 are derived from the detailed program costs incorporated in Appendix 1 and are summarized in Table 2.

Overall salary costs increased 4.1% over the previous year. This reflects the current federal wage restraint policy, much lower direct overtime costs and staff turnover during the fiscal year.

The total shareable program operations and maintenance costs increased 8.2% during the fiscal year. Significant increases were experienced in travel expenses; other services; and, parts and consumable tools (other than vehicles). Higher travel expenses reflect increases in accommodation rates during the year as well as the extended spring breakup in 1983 and the early breakup in 1984. Increased costs for "other services" reflect a large overall increase in computing costs as well as a more equitable cost-sharing arrangement for interactive data processing. All direct costs for computations were shared with the province this year. In the previous year, costs were not shared completely as some of the cost was directly associated with training of staff in new computer procedures.The increased cost of parts and consumable tools reflects both new purchases and replacement parts for existing equipment.

Several areas of shareable program costs showed a significant decline this fiscal year compared to the previous year. These included rentals, purchased goods (other than capital) and vehicle operating costs. The 6.7% decrease in rental costs resulted from lower aircraft rental services as the northern propane resupply trip is scheduled

TABLE 1

SASKATCHEWAN WATER QUANTITY PROGRAM
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1983-1984

CLASSIFICATION	TYPE*	NO. OF STATIONS**	CONVERSION	UNITS
Federal				
Remote Access	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	13	1.00	13.00
		16		14.20
Normal Access	8L	8	0.25	2.00
	12L	10	0.40	4.00
	8Q	17	0.75	12.75
	12Q	23	1.00	23.00
		58		41.75
International	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	37	0.75	27.75
	12Q	8	1.00	8.00
		64		41.10
Total		138		97.05
Federal-Provincial				
Remote Access	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	15	1.00	15.00
		18		16.20
Normal Access	8L	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	86	0.75	64.50
	12Q	15	1.00	15.00
		108		82.00
Total		126		98.20
Provincial				
Normal Access	8L	11	0.25	2.75
	12L	1	0.40	0.40
	8Q	53	0.75	39.75
	12Q	1	1.00	1.00
Total		66		43.90
Grand Total		330		239.15

* 8L - 8 month water level station 8Q - 8 month flow station
12L - 12 month water level station 12Q - 12 month flow station

** From Schedule A

TABLE 2

SASKATCHEWAN WATER QUANTITY PROGRAM
COST SUMMARY 1983-1984

Unit Cost Summary

STATION CLASSIFICATION	UNIT	SALARY $	OPERATIONS $	CAPITAL $	TOTAL $
1. Normal Access					
- Non-International	1.0	2279	1065	271	3615
- International	1.0	3190	914	271	4375
2. Remote Access	1.0	2507	4094	271	6872

Total Cost Summary

STATION CLASSIFICATION	NO. OF STATIONS	UNITS	SALARY $	OPERATIONS $	CAPITAL $	TOTAL $
Federal						
Remote	16	14.20	35 596	58 140	3 842	97 578
Normal						
- Non-International	58	41.75	95 143	44 475	11 296	150 914
- International	64	41.10	131-127	37 585	11 120	179 832
						428 324
Federal-Provincial						
Remote	18	16.20	40 610	66 328	4 383	111 321
Normal	108	82.00	186 868	87 352	22 187	296 407
						407 728
Provincial						
Normal	66	43.90	100 043	46 765	11 879	158 687
Total	330	239.15	589 387	340 645	64 707	994 739

every second year. This also resulted in the lower cost of purchased goods as less propane and aviation gasoline were required during the fiscal year. Finally, vehicle operating costs decreased 21.8% this fiscal year compared to the previous year. The reasons for this includes lower maintenance, repair and fuel costs and the lower vehicle usage.

Unit operational costs increased for the normal access hydrometric stations and decreased for the remote access stations during the year. However, these actual costs can not be readily compared to the previous years' costs as it was decided this year to separate the costs associated with conventional, remote and international stations (Table 6) rather than bulking the costs and determining a remote/normal operating cost ratio as was done in previous years. It was felt that this approach is more indicative of actual costs for each of the three station classifications and this approach will be used in subsequent annual reports. It is interesting to note that the comparative operating cost ratio decreased from 5.00 to 3.95, primarily due to no propane resupply trip and lower vehicle operating costs during the year. It is also interesting to observe that the operational cost of an international gauging station is lower than that of a non-international normal access station, in spite of the more rigorous requirement for field data collection. This is the direct result of utilizing a field office in Shaunavon as office overhead is not shareable and travel and vehicle operating costs for the field technician are much lower than would be incurred from Regina. It is hoped that the installation of additional data collection platforms at key international stations in 1984 will further reduce operational costs.

The overall capital depreciation costs increased 11.3% this fiscal year. This reflects an increase in vehicle and field equipment depreciation as old equipment and instrumentation are written off and replaced with new, more costly items. Detailed program costs (salaries, operations and capital) are shown in Appendix 1, Tables 5 to 10.

Table 3 summarizes the Saskatchewan Water Quantity Surveys program shared costs for 1983-84. The total federal share was $731 735 while the total provincial share was $407 649. This provincial share was based on provincial operation and construction costs, credit for provincial operation of one F/P hydrometric station, and the acquisition by WRB on behalf of SDOE of six water level encoders for use with the province's DCPs. The provincial deficit from 1982-83 of $962 and the provincial payment for 1983-84 of $406 605 results in a provincial deficit for 1983-84 operations of $2 006.

Table 4 shows the change (increase) in station unit costs since the implementation of the cost sharing agreement in 1975. Although overall station unit costs have more than doubled since 1975, the average increase in station unit costs in fiscal year 1983-84 is the lowest since 1975.

3.3 Cost Estimates: 1984-85

Changes affecting the 1984-85 Schedule A and the computations of the 1984-85 Schedule D estimate of $428 000 are contained in Appendix IV.

TABLE 3

SASKATCHEWAN WATER QUANTITY PROGRAM
SHARED COST SUMMARY 1983-1984
(From Table 2 & Construction Report)

FEDERAL SHARE = $428 324 + $\frac{\$407\ 728}{2}$	=	$632 188
FEDERAL CONSTRUCTION SHARE	=	$ 99 547
TOTAL FEDERAL SHARE	=	$731 735
PROVINCIAL SHARE = $\frac{\$407\ 728}{2}$ + $158 687	=	$362 551
PROVINCIAL CONSTRUCTION SHARE	=	$ 36 646
CAPITAL PURCHASES ON BEHALF OF SDOE[1]	=	$ 9 808
PROVINCIAL CREDIT FOR OPERATION OF ONE F/P STATION[2]	=	($1 356)
TOTAL PROVINCIAL SHARE (1983-84)	=	$407 649
PROVINCIAL DEFICIT (from 1982-83)	=	$ 962
NET PROVINCIAL SHARE	=	$408 611
PROVINCIAL PAYMENT 1983-84	=	($406 605)
PROVINCIAL DEFICIT FOR 1983-84	=	$ 2 006

NOTE:

1. Six Memomark III water level encoders and accessories
2. 05JF012 Wascana Creek below Kronau Marsh

TABLE 4

SASKATCHEWAN WATER QUANTITY PROGRAM
HISTORICAL SUMMARY OF STATION UNIT COSTS

FISCAL YEAR	TYPE OF STATION CONVENTIONAL	INTERNATIONAL	REMOTE
1975-76	$1 583	$1 810	$3 643
	8.7%*	8.9%	8.4%
1976-77	1 721	1 971	3 949
	12.0%	12.6%	6.7%
1977-78	1 928	2 220	4 213
	9.2%	9.6%	6.8%
1978-79	2 106	2 434	4 501
	4.5%	14.7%	2.9%
1979-80	2 200	2 791	4 631
	9.8%	9.5%	27.3%
1980-81	$2 415	$3 055	$5 894
	27.0%	26.1%	1.6%
1981-82	$3 067	$3 852	$5 993
	7.5%	8.3%	1.7%
1982-83	$3 297	$4 170	$7 003
	9.6%	4.9%	-1.9%
1983-84**	$3 615	$4 375	$6 872
1975-84	128.4%	141.7%	88.6%

Average Percent Increase
All Stations = 120%
Since 1975-76

* % = 100 x (year 2 - year 1)/year 1
** Method of calculation of station unit costs has been modified this year so values may not be directly comparable.

APPENDIX I

DETAILED PROGRAM COSTS

DETAILED PROGRAM COSTS

Appendix 1 contains Tables 5 to 10 which provide details of expenditures under the Memorandum of Agreement. Expenditures were extracted from various departmental financial systems such as payroll, material and fleet management. Operations expenditures were obtained from Supply and Services Canada detailed transaction listings. A record of individual expenditures is further supported by various purchase/pay documents which, under the federal records management system, are retained for a period of five years.

Salary Costs

Salaries of staff with full time hydrometric duties are shared under the program. Salaries of staff with partial hydrometric duties or those seconded to the program for brief periods are shared proportionately. The calculation of station unit salary costs is shown in Table 5. A factor of 1.10 and 1.40 was applied to the salary costs of remote and international gauging stations, respectively, to account for the greater effort needed to operate these types of stations. These factors are re-evaluated from time to time to reflect changing circumstances.

Operational Costs

The derivation of station unit operating costs is shown in Table 6. A record of each expenditure is shown in Table 7 while vehicle operating costs are listed in Table 8. A breakdown of 1983-84 operating costs indicates that the cost of operating a remote hydrometric station in Saskatchewan was 3.95 times greater than a normal access station. This reflects high air charter costs and the generally greater cost of travelling in northern areas.

Capital Depreciation Costs

Capital depreciation is charged for hydrometric survey vehicles and equipment as shown in Tables 9 and 10. Consumables such as small tools and clothing are charged to the program at the time of purchase as are certain other items such as metering boats that are part of the inventory of a specific station. All stage recording instruments are excluded.

The rate of depreciation for survey equipment is 10 percent annually. The actual calculation of inventory value is based on the mean of the value at the beginning and end of the fiscal year to reflect purchasing activity throughout the year.

The depreciation data for hydrometric vehicles is provided by a Fleet Management Information System which assumes a 60 month service period for station wagons and a 72 month service period for multi-purpose vehicles or trucks.

TABLE 5
SASKATCHEWAN WATER QUANTITY PROGRAM
SALARY COST 1983-1984

	Position No.	Position Title	Salary
1.	840-1265 (x0.85)	Hydrometric Technician	$ 24 592
2.	840-1279	Hydrometric Supervisor	31 267
3.	840-1285	Hydrometric Supervisor	31 267
4.	840-1370 (x0.85)	Hydrometric Supervisor	25 559
5.	840-1401	Hydrometric Technician	24 363
6.	840-1409	Hydrometric Technician	28 931
7.	840-1413	Hydrometric Technician	28 020
8.	840-1431 (x0.25)	Sediment Lab Supervisor	7 233
9.	840-1460	Hydrometric Supervisor	31 267
10.	840-1505	Hydrometric Technician	28 931
11.	840-1506	Hydrometric Technician	28 931
12.	840-5619 (x0.10)	Data Control Supervisor	3 562
13.	840-8004	Hydrometric Technician	28 931
14.	840-8012	Hydrometric Technician	28 931
15.	840-8013 (x0.05)	Construction Supervisor	1 563
16.	840-8073	Hydrometric Technician	25 085
17.	840-8119 (x0.70)	Hydrometric Technician	19 704
18.	840-8189 (x0.15)	Boundary Waters Engineer	5 077
19.	840-8907	Hydrometric Technician	28 931
20.	840-8913 (x0.85)	Hydrometric Technician	24 592
21.	840-8914	Hydrometric Technician	28 931
22.	840-8915 (x0.90)	Hydrometric Technician	26 038
23.	840-8916	Hydrometric Technician	28 931
24.	840-8951	Hydrometric Supervisor	31 267
25.	840-8952 (x0.15)	Computations Technician	3 466
26.	840-9253 (x0.04)	Hydrometric Assistant (Term)	495
27.	COSEP (x0.30)	Hydrometric Assistant	3 175
28.	COSEP (x0.30)	Hydrometric Assistant	3 154
29.	Overtime	All Positions	7 193
	TOTAL	20.49 P-Y's	$589 387

CALCULATION OF STATION UNIT SALARY COST

Station Units	
Remote	30.40
Normal	
- Non-International	167.65
- International	41.10
TOTAL	239.15
Salary-weighted Station Units	
- Remote x1.10	33.44
- Normal, Non-International	167.65
- International x1.40	57.54
TOTAL	258.63

$$\text{Unit Salary Cost} = \frac{\text{Total Salary Cost}}{\text{Salary-weighted Station Units}} = \frac{589\ 387}{258.63} = \$2279$$

Unit Salary Cost Normal = $2279
Unit Salary Cost Remote = $2279 x 1.10 = $2507
Unit Salary Cost International = $2279 x 1.40 = $3190

TABLE 6

SASKATCHEWAN WATER QUANTITY NETWORK
OPERATIONS COST SUMMARY 1983-1984

	COST CODE*			
	00005	00006	00007	TOTAL
Travel	42 442	5 522	9 877	57 841
Transportation and Postage	575	878	140	1 593
Telecommunications	9 035	811	2 661	12 507
Advertising and Printing Services	510	-	53	563
Professional and Special Services	2 174	-	2 020	4 194
Temporary Help Services	236	-	-	236
Other Services	35 738	9 145	8 412	53 295
Rentals	2 369	90 785	547	93 701
Purchased Repairs (other than vehicles)	7 262	1 348	1 010	9 620
Public Utility Services	28 774	695	2 803	32 272
Purchased Materials (other than capital)	9 104	9 575	782	19 461
Parts and Consumable Tools (other than vehicles)	11 081	4 734	1 144	16 959
	149 300	123 493	29 449	302 242
Current Meter Maintenance	1 313	244	319	1 876
Vehicle Operating Costs (Fleet Management System)	27 979	731	7 817	36 526
Total Operating Costs	178 592	124 468	37 585	340 644
Station Units	167.65	30.4	41.1	239.15
Unit Operations Cost	1 065	4 094	914	1 424

*00005 - conventional
00006 - remote
00007 - international

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1983 - 1984

Line Object Name	Total	LO#	001	003	004	005	006	007	008	010	012	013	016	017	019	050	179	CAPITAL
TRAVEL																		
- Business Travel Expenses	773	0701	773															
- Itinerant Work Travel Expenses	89 597	0711	9 895	180	15	42 330	5 204	9 814	406	18 532	23			1 242	1 837	119		
- Car Mileage	146	0712	146															
- Itinerant Work Travel	4 984	0714	3 788												1 196			
- Travel USA - business	4 120	0730	3 796						324									
- Travel USA - Itinerant work	1 303	0731	121					63		1 119								
- Other Travel Abroad - Business	1 302	0732	1 302															
- Taxi	13	0741	13															
- Travel Training	3 485	0744	3 075	410														
- Travel Non Public Service	430	0750				112	318											
- Travel Costs	2 295	0760	2 295															
- Sale Purchase of Residences	5 565	0762	5 565															
- Moving, Storage etc	67	0765	67															
- Central Removal Service DSS	5 725	0766	5 725															
TRANSPORTATION & POSTAGE																		
- Air	860	0801	494			209	157											
- Rail	1 750	0802	247	1 473		30												
- Truck	2 762	0804	781	509		165	720			35				463	89			
- Bus	249	0805	178			33		13								25		
- Parcel Post	3	0851				3												
- Other Postal	386	0852	233			25	1	127										
- Courier	537	0853	411			110								16				
TELEPHONES																		
- Telephones (GTA)	5 595	0901	5 319			276												
- Install & Repair	190	0902				131		59										
- Long Distance	7 138	0903	2 374	51		3 625	4	561		289			169	65				
- Service Charges (Rental)	21 376	0904	11 697			5 003	807	2 041						1 828				

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1983 - 1984

Line Object Name	Total	LO#	001	003	004	005	006	007	008	010	012	013	016	017	019	050	179	CAPITAL
- Other	60	0905		60														
- Message Data Communications	43	0906	43															
ADVERTISING & PRINTING																		
- Advertising Printing	246	1001	193					53										
- Other Printing Services DSS	2 819	1013	2 259			396				13				151				
- Other	810	1022	553	143		114												
PROFESSIONAL & SPECIAL SERVICE																		
- Surveys - Consultants	3 909	1111									3 909							
- Lab Test Analysis	-1 272	1170		-1 272														
- Gauge Attendants	4 194	1171				2 174		2 020										
- Other Science Service	5 950	1173	950								5 000							
TRAINING																		
- Staff Development - PSC	1 470	1220	1 470															
- Tuition University & College	324	1221	324															
- Other	1 951	1222	1 951															
TEMPORARY HELP SERVICE																		
- Contract Clerical	19 585	1302	19 585															
- Other Temporary Help	236	1303				236												
OTHER SERVICES																		
- Laundry Dry Cleaning	188	1501				188												
- EDP Service Other Dept.	6 993	1505	6 538			117								338				
- EDP Purchase Software	60 392	1510	7	1 039	55	34 639	6 433	8 412	4	2			454	9 335			12	
- Contract Admin. DSS	15 536	1525	9 712	87		382	2 700					2 649		6				
- Graphic Service	66	1535	7							59								
- Other Photo Service	260	1536	78			122	12			48								

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1983 - 1984

Line Object Name	Total	LO#	001	003	004	005	006	007	008	010	012	013	016	017	019	050	179	CAPITAL
- Print Services	1 074	1545	1 074															
- Print License	31	1546	16			15												
- Brokerage Fees	2 862	1554	1 064			275									1 523			
- Garbage Collection	288	1566	288															
- Membership Fees	89	1575	89															
- Other Service Contracts	210	1586	210															
- Other Services	49	1595	49															
RENTALS																		
- Land	241	1601					241											
- Engineering Works	7 510	1605								7 510								
- Photo Printing Equipment	1 800	1621	1 800															
- Machine Equipment	2 370	1625	555			603				1 212								
- Motor Vehicle	2 125	1630	525			25		112		1 463								
- Aircraft	89 122	1635	214				88 368			495						45		
- Gas Cylinders	4 352	1650				1 741	2 176	435										
- Other	485	1651	120	280						85								
PURCHASED REPAIR																		
- Air Conditioning	50	1711	50															
- Electric Lighting	359	1713	231							128								
- Other Electrical Equipment	35	1714				35												
- Measuring	4 147	1718	102			2 932	543	190		380								
- Safety	143	1719	143															
- Fire Fighting	7	1720	7															
- Service Industry	295	1721	54			241												
- Other Equipment	1 126	1727	58	20		284	10			754								
- EDP Equipment	5 092	1735	35			3 629	619	809										
- Office Machine	901	1736	901															
- Ships, Boats	2 217	1740					176			2 041								
- Road Motor Vehicles	5 258	1746	4 924			91		11		232								

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1983 - 1984

Line Object Name	Total	LO#	001	003	004	005	006	007	008	010	012	013	016	017	019	050	179	CAPITAL
- Miscellaneous Vehicles	45	1747	45															
- Accident Repair	50	1748				50												
BUILDING & STRUCTURES REPAIR																		
- Power Transmission Line	4 243	1825								4 243								
- Warehouse	948	1850	948															
- Tenant Services	17 863	1880										17 863						
PUBLIC UTILITY SERVICES																		
- Electric Consumption	32 272	1901				28 774	695	2 803										
- Other Public Utilities	6	1907	6															
PURCHASED MATERIALS																		
- Food	23	2002					23											
- Other Sand, Gravel	5 368	2009	17			150				5 201								
- Propane	647	2013	8			501	18	120										
- Automotive Gas	41 486	2014	41 483					3										
- Aviation Gas	6 595	2015					6 595											
- Jet Fuel	121	2016					121											
- Other Petro Products	1 377	2018	1 122			44	186	3		22								
- Leather Furniture Etc.	897	2019																897
- Wood Fabric Materials	2 188	2020				152				2 036								
- Paper, paper board	2 508	2021	2 287	65		156												
- Textile Fabricated Materials	1 042	2022	42			118	190			36								656
- Chemical & Related Products	1 645	2023	299			695	504	16		131								
- Plastic bags - sheeting	29	2025				9				20								
- Oxygen & Acetylene	45	2027				45												
- Iron, Steel	7 642	2028	1 004			674	364	91		5 260								249
- Non-Ferrous Metal	27	2029								27								
- Metal Fabricated Products	18 373	2030	154			2 843	307	361		2 784								11 924

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1983 - 1984

Line Object Name	Total	LO#	001	003	004	005	006	007	008	010	012	013	016	017	019	050	179	CAPITAL
- Cement	770	2031	6			17				747								
- Glass	124	2034	124															
- Insulation	206	2035								206								
- Protective Clothing	3 081	2040	209			2 080	792											
- Toiletries	402	2042	25	298		9								70				
- Recreation Equipment	16	2043	16															
- Kitchen Utensils	20	2045					20											
- Stocked Items - DSS	586	2048	586															
- Library Stock	1 299	2051	1 207											92				
- Maps, Charts etc	318	2052	68			22	3	96		8				121				
- Stationery	5 939	2054	5 515	138		260							26					
- Drafting Supplies	728	2055	728															
- Facsimile Paper	213	2057	213															
- Photocopy Paper	491	2058	491															
- Data Processing Supplies	516	2059	61			144							311					
- Photographic Goods	103	2060	12			49	8	3		31								
- Containers	400	2063		40			360											
- Paint	635	2068	33			103		4		495								
- Miscellaneous Products	1 555	2070	670	5		574	26	39		241								
- Hardware	1 013	2071	74			459	58	46		376								
PARTS & CONSUMABLE TOOLS																		
- Heat, Air Conditioning, etc.	41	2111				41												
- Cooking equipment	6	2112				6												
- Plumbing	820	2113	73			238				509								
- Electric Lighting	3 707	2114	439			491		1		2 776								
- Other Electrical Equipment	1 883	2116	778	20		929	8	2		146								
- General Electronic equipment	18	2117	4			14												
- Batteries	3 589	2118	215			2 778	540	56										
- Lab Glassware	381	2119		381														

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1983 - 1984

Line Object Name	Total	LO#	001	003	004	005	006	007	008	010	012	013	016	017	019	050	179	CAPITAL
- Other Lab. Supplies	4 565	2120		4 565														
- Measuring Instruments	15 691	2122	1 550	414		5 047	3 654	1 030		18					3 978			
- Signal System	532	2123	532															
- Safety Equipment	982	2124	113			51	17											801
- Service Industry	1 559	2125	854			562	95	24		24								
- Hand Tools	1 841	2126	761			747	163	31		139								
- Other Equipment	332	2128	107			49				176								
- EDP Equipment	264	2135												264				
- Office Machines & Equipment	71	2136	28															43
- Ships, Boats	285	2140				28	257											
- Motor Vehicles	5 405	2146	5 299			100				6								
- Tires & Tubes	3 779	2147	3 779															
- Miscellaneous Vehicles	887	2148	887															
LAND & STRUCTURES																		
- Gauge Station	10 318	2206																10 318
- Culvert	8 010	2246																8 010
EQUIPMENT ACQUISITION																		
- Air Conditioner	10 000	2313																10 000
- Generators	1 160	2315																1 160
- Electric Lighting	15 000	2316																15 000
- Measuring Equipment	1 602	2318																1 602
- Measuring Device	42 211	2322																42 211
- Pumps	722	2330																722
- Service Industry Equipment	80	2332																80
- Furniture	840	2333																840
- Furniture - DSS	695	2334																695
- Other EDP Equipment	42 237	2357																42 237
- Other EDP Equip Over $500	968	2358																968

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1983 - 1984

Line Object Name	Total	LO#	001	003	004	005	006	007	008	010	012	013	016	017	019	050	179	CAPITAL
- Boat	1 025	2365																1 025
- Vehicle	50 725	2371																50 725
OTHER EXPENDITURES																		
- Interest, Overhead	131	2515	131															
- Vehicle Registration	264	2528	264															
- Sub-Total	813 130		187 741	8 906	70	149 300	123 493	29 449	734	60 055	8 932	20 512	960	13 991	8 623	189	12	200 163
- Current Meters - calibration servicing & parts (May 14, 1982 Administrators' Meeting)	1 876					1 313	244	319										
TOTAL	815 006		187 741	8 906	70	150 613	123 737	29 768	734	60 055	8 932	20 512	960	13 991	8 623	189	12	200 163

TABLE 8

VEHICLE OPERATING COSTS 1983-84*

Vehicle Type	Usage vehicle-months	Cost/Month	Total Cost Construction 010	Hydrometric 005,006,007	Hydro Normal 005	Hydro Remote 006	Hydro Int'l 007
Full Size	62	115.51	1 270.61	5 891.01	4 512.51	117.82	1 260.68
Multi-purpose	110	164.74	1 976.88	16 144.52	12 366.70	322.89	3 454.93
Light Truck	88	164.67	-	14 490.96	11 100.08	289.82	3 101.06
Med. Truck	24	321.13	7 707.12	-	-	-	-
TOTAL			10 956.61	36 526.49	27 979.29	730.53	7 816.67

* Data extracted from F.M.I.S. - Fleet Cost Summary Report.
Hydrometric costs for 1983-84 are prorated
on basis of the 1982-83 Annual Report.

TABLE 9

SASKATCHEWAN WATER QUANTITY PROGRAM
CAPITAL DEPRECIATION COSTS 1983 - 1984

1.	VEHICLE DEPRECIATION (Table 10)		$31 297
2.	EQUIPMENT DEPRECIATION*		
	- Field Equipment	$101 663	
	- Marine Equipment	$ 18 482	
	- Scientific Equipment	$ 95 929	
	- Transportation Equipment	$ 12 969	
	- Shop & Construction Equipment	$ 49 603	
	- Accountable Items	$ 59 768	
	Total Inventory Value March 31, 1984	$338 414	
	Total Inventory Value March 31, 1983	$329 786	
	Average Inventory Value For 1983-84	$334 100	
	Capital Depreciation of Equipment @ 10%	$\frac{\$334\ 100}{10}$ =	$33 410
3.	TOTAL CAPITAL DEPRECIATION		$64 707
4.	UNIT CAPITAL DEPRECIATION		
	= $\frac{\text{Total Capital Depreciation}}{\text{Total Station Units}}$ =	$\frac{\$\ 64\ 707}{239.15}$ =	$ 271

* Departmental Equipment-In-Use Material Management System

TABLE 10

VEHICLE DEPRECIATION
SASKATCHEWAN FY 1983-84

Vehicle Number	Original Capital Cost $	Depr. per month $	Time in use Months	Annual Depr. $	Remarks
Station Wagons - Lifetime 5 years (60 months)					
77-297	5 242	87	2	174	CADC - June 83
78-340	5 653	94	12	1 128	
79-462	6 806	113	12	1 356	
81-045	7 874	131	8	1 048	Construction - CADC - Dec. 83
81-046	7 874	131	12	1 572	
81-047	7 874	131	12	1 572	
81-048	7 874	131	3	393	Construction
			1	131	Hydrometric
			8	1 048	Office Car
83-150	9 009	150	10	1 500	Office Car
Multi-Purpose Vehicles or Trucks - Lifetime 6 years (72 Months)					
76-048	6 438	89	2	178	CADC - June 83
78-009	4 664	65	2	130	CADC - June 83
78-067	20 166	280	12	3 360	Construction
78-341	5 166	72	2	864	CADC - June 83
79-192	7 327	102	12	1 224	
79-193	7 219	100	12	1 200	
79-213	7 198	100	12	1 200	
80-102	6 181	86	12	1 032	
80-103	6 181	86	12	1 032	
80-104	9 506	132	12	1 584	
80-105	7 913	110	12	1 320	
80-106	11 233	156	12	1 872	
81-044	9 919	138	12	1 656	
82-068	12 295	171	12	2 052	
82-069	12 295	171	12	2 052	
82-070	9 276	129	12	1 548	Construction
83-002	8 059	112	12	1 344	
83-003	12 719	177	12	2 124	Construction
83-149	14 395	200	12	2 400	
83-151	12 660	176	12	2 112	
83-152	12 660	176	12	2 112	

Actual replacement cost of Saskatchewan Vehicles in 1983/84 was $48 724

Field surveys Vehicles Depreciation (excluding Construction Vehicles) $31 297

Construction Vehicles Depreciation = $8 473 (Charged to individual projects)

Total Depreciation = $39 770

APPENDIX III

STATION AND COST SUMMARY DATA

FOR INCLUSION IN NATIONAL ANNUAL REPORT

Province: SASKATCHEWAN

TABLE 1
WATER QUANTITY SURVEYS
GAUGING STATION DATA FOR 1983-84

No. of Stations			Changes during 1983-84		Stn. Designation April 1, 1983			
April 1/82	April 1/83	Change	Added	Discontinued	Fed.	F/P	Prov.	Contrib.
357	378	+21	22	1	(2) 138	127	113	11

*Bracket Sediment Stations

TABLE 2
WATER QUANTITY SURVEYS
COMPARATIVE GAUGING STATION DATA April 1/75 to April 1, 1983

Federal Stations			F/P Stations			Provincial Stations			Total Stations		
Apr 1/75	Apr 1/83	Chge	Apr 1/75	Apr 1/83	Chge	Apr 1/75	Apr 1/83	Chge	Apr 1/75	Apr 1/83	Chge
173	138	-35	106	127	+21	51	113	+62	330	378	+48

TABLE 3
WATER QUANTITY SURVEYS
DETAILED GAUGING STATION DATA 1983-84

F-1	F-2	F-3	F-4	F-5	F-6	F-7	Total F	F/P	P	Contributed	Total-All
11	43	64	1	0	0	19	138	127	113	11	389

Bracket Sediment Stations in all categories.

PROVINCE: Saskatchewan

TABLE 4
WATER QUANTITY SURVEYS
TOTAL PROGRAM COSTS & SHAREABLE COSTS FOR 1983-84
(× $1000)

Total Program Costs					Shareable Costs						
P/Yrs	Sal.	Oper.	Cap.	Total	P/Yrs	Sal.	Oper.	Const.	Total	F Share	P Share
37.0	1 129.4	614.5	202.2	1 946.1	20.49	589.4	* 413.8	136.2	1 139.4	731.8	407.6

TABLE 5
WATER QUANTITY SURVEYS
SUMMARY OF SCHEDULES D/F - 1983-84

Streamflow & Water Level		Sediment		Total
Operation	Construction	Operation	Construction	
360 000	50 000	0	0	410 000

TABLE 6
WATER QUANTITY SURVEYS
COMPARISON - SCHEDULED & ACTUAL COSTS FOR 1983-84
(Dollars)

Salary & Operations		Construction		Total			Annual Payment Received	Received Minus Actual
Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Difference		
360 000	371 003	50 000	36 646	410 000	407 649	2 351	406 605	** -1 044

* Consists of operations costs (Table 6) + capital depreciation costs (Table 9) + capital purchases on behalf of SDOE (9 808) -/cost of operation of 1 F/P station ($1 356)

** Deficit for 1982-83 = $962, therefore net Saskatchewan deficit for 1983-84 = 1 044 + 962 = $2 006.

APPENDIX III

CANADA - SASKATCHEWAN

MEMORANDUM OF AGREEMENT

FOR

WATER QUANTITY SURVEYS

MEMORANDUM OF AGREEMENT made this eighteenth day of February, 1975,

BETWEEN:

The Government of Canada, hereinafter called "Canada", represented by the Minister of the Environment

OF THE FIRST PART

-and-

The Government of the Province of Saskatchewan, hereinafter called the "Province", represented by the Minister of Environment

OF THE SECOND PART.

WHEREAS co-operative water quantity surveys have been carried on for many years under various informal federal-provincial agreements in the Provinces of Canada by the Water Survey of Canada of the Department of the Environment, for the purpose of securing co-ordinated and standardized basic data to facilitate resource planning and management in general and the design and implementation of projects related to navigation, hydro-electric development, irrigation, drainage, flood control, recreation, domestic and industrial water supply and other purposes;

AND WHEREAS the Governor-in-Council has by Order-in-Council No. PC 1975-1/172 dated January 28, 1975, authorized the Minister of Environment to execute this agreement on behalf of Canada, subject to funds being voted by the Parliament of Canada;

AND WHEREAS the Lieutenant Governor in Council has, by Order-in-Council No. O.C. 282/75 dated February 11, 1975, authorized the Minister of Environment to execute this agreement on behalf of the Province subject to funds being voted by the Legislative Assembly.

NOW THEREFORE this agreement witnesseth that water quantity surveys in the Province and the financing thereof shall be continued and maintained upon the following basis;-

DEFINITIONS

a) ANNUAL PAYMENT - a sum, agreed to by both parties in advance of the fiscal year, which shall represent the costs of operation and construction of water quantity survey stations.

b) CONSTRUCTION - includes the construction of new water quantity survey stations and the maintenance, repair and reconstruction of existing water quantity survey stations.

c) CONSTRUCTION PERSONNEL - includes foremen and labourers on full time duty as well as engineering and technical staff on part time supervisory duty or reconnaissance assignment.

d) FIELD PERSONNEL - includes hydrometric supervisors and field technicians on full time duty as well as engineering and technical staff on temporary assignment.

e) NETWORKS - an organized system of gauging stations for collection of water quantity survey data.

f) OPERATING PARTY - either party to this agreement which operates water quantity survey stations.

g) PUBLISHED DATA - includes streamflow, water level and sediment data. The data is to be available in publications and computer compatible data files.

h) SEDIMENT STATIONS - any location where surveys are undertaken to collect data on suspended sediment or bed material or bed load data singly or in combination. Water temperature data is to be collected.

i) WATER QUANTITY SURVEY STATIONS - any location where surveys are undertaken to collect streamflow or water level or suspended sediment or bed material or bed load data singly of in combination. Water temperature data may be collected.

ARTICLE I

Each water quantity survey station presently in operation has been identified according to the designation federal, federal-provincial or provincial. The current designation is given in Schedule A, hereto attached. Schedule A may be revised to include a change in the designation of a station, the addition of new stations or the deletion of stations as agreed by the Co-ordinating Committee (Article XII) and approved by the officials named in Article XIII.

OPERATIONAL CONSIDERATIONS

ARTICLE II

Canada will construct and operate and pay the cost of construction and the annual cost of operation of water quantity survey stations which have been designated as federal. Where Canada deems it desirable in the interest of efficiency of operation, the Province may be requested to construct and operate some federal water quantity survey stations. If the Province agrees to such agreements, Canada would in such cases reimburse the Province for the cost of construction and annual cost of operation in accordance with Article VI.

ARTICLE III

Where Canada constructs and operates water quantity survey stations designated as federal-provincial, the Province will reimburse Canada for 50% of the construction costs and 50% of the annual cost of operation. Where the Province constructs and operates these stations, Canada will reimburse the Province for 50% of the construction costs and 50% of the annual cost of operation in accordance with Article VI.

ARTICLE IV

If requested by the Province, Canada will construct and operate water quantity survey stations designated as provincial provided the Province reimburses Canada for the construction cost and annual cost of operation. If the Province constructs and operates these stations the Province will assume the cost of construction and operation in accordance with Article VI.

ARTICLE V

a) The operating party shall provide the staff to meet its responsibilities under this agreement.

b) Canada will at its own expense publish data from stations that it operates. Canada will on request at its own expense, publish data from stations operated by the Province providing the data meet national standards.

c) Water quantity surveys under this agreement shall be carried out to national standards in field procedures, equipment and instrumentation, data compilation and will use national guidelines for station designations. Such standards and guidelines shall be developed and maintained by Canada in consultation with all of the Provinces.

d) Canada and the Province shall work together to take advantage of technological advancements which improve the quality of data and the efficiency of standard procedures and to develop methods and techniques to assist in planning water quantity survey networks.

e) Canada at its own expense will provide calibration service for water quantity survey velocity instruments for both parties.

FINANCIAL CONSIDERATIONS

ARTICLE VI

a) Procedures for computing the annual payment are given in Schedule C.

b) The annual payment for 1975-76 is set out in Schedule D. The annual payment for subsequent years shall be determined according to the terms of this agreement and the procedures as set out in Schedule C.

c) Annual operation costs, except for sediment stations, will be computed using average annual water quantity survey station costs and the number of stations to be operated. The average annual water quantity survey station costs shall be recomputed annually according to the items listed in Schedule B.

d) Annual construction costs, except for sediment stations, will be the cost of constructing new water quantity survey stations plus repairs to and major reconstruction of existing water quantity survey stations.

e) The annual operation costs for sediment stations will be the summation of the individual station operation costs.

f) The annual construction costs of sediment stations will be the cost of constructing new sediment stations plus repairs to and major reconstruction of existing stations.

ARTICLE VII

a) The party operating the water quantity survey stations in accordance with Articles II, III and IV, will be responsible for providing and paying the total cost of the water level recording equipment.

b) All costs associated with the purchase, installation and operation of specialized water quantity survey equipment will be paid for by the party or parties requiring the service.

ARTICLE VIII

Canada or the Province, depending on the operating responsibilities, shall submit invoices for one-quarter of the annual payment on July 1st, October 1st, January 1st and March 1st of each fiscal year in accordance with the annual payment set out in Schedule D. Payment is to be made as soon as possible after receipt of each quarterly claim but in no case later than March 31st of each year.

ARTICLE IX

Except as agreed by the parties hereto where both parties have an interest, either operational or financial, the annual net change in the total number of water quantity survey stations, including federal, federal-provincial and provincial, as set out in Schedule A, is not to exceed 7% in any year.

ARTICLE X

Each party constructing or operating a water quantity survey station or stations shall keep complete records of all shareable expenditures made pursuant to this agreement and shall support such expenditures with proper documentation. Canada and the Province upon request shall make these records and documents available to auditors appointed by each other.

CO-OPERATION

ARTICLE XI

There shall be a free exchange of water quantity survey data between Canada and the Province. The party operating the water quantity survey station shall retain originals or a microfilm copy of observations, measurements, recorder charts and computations and these are to be available to the other party on request.

ARTICLE XII

The officials named in Article XIII shall establish a Co-ordinating Committee representing each of the parties affected by this agreement. The Co-ordinating Committee shall be responsible for:

a) Planning and the continuing review of water quantity survey networks, including addition and deletion of all stations within Provincial boundaries.

b) Determining and reviewing the designation of water quantity survey stations using national guidelines which may from time to time be changed, subject to ratification by Canada and all of the Provinces.

c) Assuring the maintenance of standards in procedures, data compilation and instrumentation.

d) Reviewing annual operating costs and establishing average annual station costs, as per Article VI, for revision of Schedule D.

e) Preparation annually of new Schedule A and D which with the approval of the officials named in Article XIII would apply for the second and each subsequent year of the agreement.

The committee shall meet at least once a year and shall report to the officials named in Article XIII.

ADMINISTRATIVE ARRANGEMENTS

ARTICLE XIII

This agreement is to be administrated for Canada by the Regional Director of the Inland Waters Directorate located at Regina, Saskatchewan, and for the Province by the Chief, Water Management Service, Saskatchewan Department of Environment, located at Regina, Saskatchewan.

IMPLEMENTATION

ARTICLE XIV

The parties hereto agree that water quantity surveys will be carried out as indicated in Articles I to XIII inclusive and the Schedules attached hereto.

PERIOD OF AGREEMENT

ARTICLE XV

This agreement shall become effective and binding on the parties upon the first day of April, 1975.

The agreement may be terminated by Canada or the Province on March 31st of any year provided that eighteen (18) months notice in writing is given. The agreement may be revised with the consent of the Governor-in-Council and the Lieutenant Governor-in-Council.

IN WITNESS WHEREOF the Honourable Jeanne Sauvé, Minister of Environment has hereunto set her hand on behalf of Canada, and the Honourable Neil E. Byers, Minister of Environment has hereunto set his hand on behalf of the Province of Saskatchewan.

Signed on behalf of Canada)
by the Honourable Jeanne Sauvé,)
Minister of Environment)
)
)
)
IN THE PRESENCE OF)
)
)
)
)
)
Signed on behalf of the Province of)
Saskatchewan by the Honourable)
Neil E. Byers, Minister of)
Environment)
)
)
)
IN THE PRESENCE OF)
)
)
)
)

SCHEDULE A

APR 01 1983

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL 1. SUPPORT NATIONAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05GG005	ANGLIN LAKE RESERVOIR	WSC	12L			PRINCE ALBERT
2.	05HA070	DOWNIE LAKE INFLOW CANAL	WSC	8Q			REGINA
3.	05HA064	DOWNIE LAKE RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
4.	05JF008	FAHLMAN CREEK NEAR DAVIN	WSC	8Q			REGINA
5.	05HA069	GAP CREEK BELOW DOWNIE LAKE DIVERSION	WSC	8Q			REGINA
6.	05HA074	HARRIS RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
7.	05HA063	JUNCTION RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
8.	05HA076	MAPLE CREEK BELOW JUNCTION RESERVOIR	WSC	8Q			REGINA
9.	05JC004	RUSHLAKE CREEK ABOVE HIGHFIELD RESERVOIR	WSC	8Q			REGINA
10.	05GG007	SPRUCE RIVER BELOW ANGLIN LAKE RESERVOIR	WSC	12Q			PRINCE ALBERT
11.	05GG006	SPRUCE RIVER DIVERSION TO EMMA LAKE	WSC	8Q			PRINCE ALBERT

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1983-84
FEDERAL 1. SUPPORT NATIONAL PROGRAMS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
NORMAL ACCESS				
	8L	3	0.25	0.75
	12L	1	0.40	0.40
	8Q	6	0.75	4.50
	12Q	1	1.00	1.00
TOTAL		11		6.65
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		11		6.65

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL 2. INTERPROVINCIAL RIVERS

APR 01 1983

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05MD004	ASSINIBOINE RIVER AT KAMSACK	WSC	12Q			REGINA
2.	05JE010	AVONLEA INDEX RESERVOIR	WSC	8L			REGINA
3.	05JE007	AVONLEA RESERVOIR NEAR AVONLEA	WSC	8L			REGINA
4.	11AB117	BATTLE CREEK AT ALBERTA BOUNDARY	WSC	8Q			REGINA
5.	05JF006	BOGGY CREEK NEAR LUMSDEN	WSC	8Q			REGINA
6.	05AH001	BOXELDER CREEK NEAR WALSH	WSC	8Q			CALGARY
7.	05HF007	BRODERICK IRRIGATION CANAL BELOW PUMPING STATION	WSC	8Q			REGINA
8.	05JG009	BUFFALO POUND LAKE AT PUMPING STATION	WSC	12L			REGINA
9.	05KH007	CARROT RIVER NEAR TURNBERRY	WSC	12Q			WINNIPEG
10.	06EA002	CHURCHILL RIVER AT SANDY BAY	WSC	12Q		REMOTE	PRINCE ALBERT
11.	05JM006	CROOKED LAKE NEAR GRAYSON	WSC	12L			REGINA
12.	05KH011	DRAGLINE CHANNEL NEAR SQUAW RAPIDS	WSC	12Q			PRINCE ALBERT
13.	05JK005	ECHO LAKE AT FISH HATCHERY	WSC	12L			REGINA
14.	05JM010	EKAPO CREEK NEAR MARIEVAL	WSC	8Q			REGINA
15.	05JG006	ELBOW DIVERSION CANAL AT DROP STRUCTURE	WSC	12Q			REGINA
16.	05JL002	INDIANHEAD CREEK NEAR INDIAN HEAD	WSC	8Q			REGINA
17.	05JL004	KATEPWA LAKE AT KATEPWA BEACH	WSC	12L			REGINA
18.	05HF003	LAKE DIEFENBAKER AT GARDINER DAM	WSC	12L			REGINA
19.	05JH004	LAST MOUNTAIN LAKE AT ROWAN'S RAVINE	WSC	12L			REGINA
20.	11AB082	LODGE CREEK AT ALBERTA BOUNDARY	WSC	8Q			REGINA
21.	05JF013	LUMSDEN INDEX RESERVOIR	WSC	8L			REGINA
22.	05JE006	MOOSE JAW RIVER NEAR BURDICK	WSC	12Q	X		REGINA
23.	05GG001	NORTH SASKATCHEWAN RIVER AT PRINCE ALBERT	WSC	12Q	X		PRINCE ALBERT

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL 2. INTERPROVINCIAL RIVERS

APR 01 1983

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
24.	05EF001	NORTH SASKATCHEWAN RIVER NEAR DEER CREEK	WSC	12Q			PRINCE ALBERT
25.	05JG004	QU'APPELLE RIVER ABOVE BUFFALO POUND LAKE	WSC	12Q			REGINA
26.	05JM013	QU'APPELLE RIVER AT HYDE	WSC	8Q			REGINA
27.	05JK002	QU'APPELLE RIVER BELOW CRAVEN DAM	WSC	12Q			REGINA
28.	05JL001	QU'APPELLE RIVER BELOW KATEPWA LAKE	WSC	12Q			REGINA
29.	05JK007	QU'APPELLE RIVER BELOW LOON CREEK	WSC	12Q			REGINA
30.	05JG007	QU'APPELLE RIVER BELOW MOOSE JAW RIVER	WSC	12Q			REGINA
31.	05JF001	QU'APPELLE RIVER NEAR LUMSDEN	WSC	12Q			REGINA
32.	05JM001	QU'APPELLE RIVER NEAR WELBY	WSC	12Q			REGINA
33.	05LC001	RED DEER RIVER NEAR ERWOOD	WSC	12Q			PRINCE ALBERT
34.	05HD033	REID LAKE NEAR DUNCAIRN	WSC	12L			REGINA
35.	05JG013	RIDGE CREEK NEAR BRIDGEFORD	WSC	8Q			REGINA
36.	05JM007	ROUND LAKE NEAR WHITEWOOD	WSC	12L			REGINA
37.	05KH008	SASKATCHEWAN RIVER NEAR MANITOBA BOUNDARY	WSC	12Q		REMOTE	WINNIPEG
38.	05JH007	SILTON INDEX RESERVOIR	WSC	8L			REGINA
39.	05HG001	SOUTH SASKATCHEWAN RIVER AT SASKATOON	WSC	12Q			REGINA
40.	05HH001	SOUTH SASKATCHEWAN RIVER AT ST. LOUIS	WSC	12Q			PRINCE ALBERT
41.	05HD034	SWIFT CURRENT CANAL AT SWIFT CURRENT	WSC	8Q			REGINA
42.	05MB009	THEODORE RESERVOIR NEAR THEODORE	WSC	8L			REGINA
43.	05JF005	WASCANA CREEK NEAR LUMSDEN	WSC	12Q			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1983-84
FEDERAL 2. INTERPROVINCIAL RIVERS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	2	1.00	2.00
TOTAL		2		2.00
NORMAL ACCESS				
	8L	5	0.25	1.25
	12L	8	0.40	3.20
	8Q	10	0.75	7.50
	12Q	18	1.00	18.00
TOTAL		41		29.95
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		43		31.95

SCHEDULE A

APR 01 1983

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL 3. INTERNATIONAL COMMITMENTS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	11AB095	ADAMS LAKE	WSC	8L			REGINA
2.	11AB089	ALTAWAN RESERVOIR NEAR GOVENLOCK	WSC	8L			REGINA
3.	05NC006	ARCOLA INDEX RESERVOIR	WSC	8L			REGINA
4.	11AB027	BATTLE CREEK AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
5.	11AB101	BATTLE CREEK BELOW NASHLYN PROJECT	WSC	8Q			REGINA
6.	11AB118	BATTLE CREEK BELOW WILSONS WEIR	WSC	8Q			REGINA
7.	11AB096	BATTLE CREEK NEAR CONSUL	WSC	8Q			REGINA
8.	11AF005	BEAVER CREEK NEAR INTERNATIONAL BOUNDARY	WSC	12Q			REGINA
9.	11AC064	BELANGER CREEK DIVERSION TO CYPRESS LAKE	WSC	8Q			REGINA
10.	05NB012	BOUNDARY RESERVOIR NEAR ESTEVAN	WSC	12L			REGINA
11.	11AE013	COOKSON RESERVOIR NEAR CORONACH	WSC	12L			REGINA
12.	11AC037	CYPRESS LAKE	WSC	8L			REGINA
13.	11AC060	CYPRESS LAKE EAST OUTFLOW CANAL	WSC	8Q			REGINA
14.	11AB078	CYPRESS LAKE WEST INFLOW CANAL	WSC	8Q			REGINA
15.	11AB085	CYPRESS LAKE WEST INFLOW CANAL DRAIN	WSC	8Q			REGINA
16.	11AB077	CYPRESS LAKE WEST OUTFLOW CANAL	WSC	8Q			REGINA
17.	05NB029	DEAD LAKE PROJECT - SOURIS RIVER CHANNEL	WSC	8L			REGINA
18.	05NB022	DEAD LAKE RESERVOIR NEAR MIDALE	WSC	8L			REGINA
19.	11AC025	DENNIEL CREEK NEAR VAL MARIE	WSC	8Q			REGINA
20.	11AE003	EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY	WSC	12Q			REGINA
21.	11AC052	EASTEND CANAL	WSC	8Q			REGINA
22.	11AC055	EASTEND RESERVOIR	WSC	8L			REGINA
23.	11AC041	FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA

SCHEDULE A

APR 01 1983

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL 3. INTERNATIONAL COMMITMENTS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
24.	11AC001	FRENCHMAN RIVER BELOW EASTEND RESERVOIR	WSC	8Q			REGINA
25.	11AC062	FRENCHMAN RIVER BELOW NEWTON LAKE	WSC	8Q			REGINA
26.	05ND006	FROBISHER INDEX RESERVOIR	WSC	8L			REGINA
27.	11AB102	GAFF DITCH NEAR MERRYFLAT	WSC	8Q			REGINA
28.	11AC065	HUFF LAKE GRAVITY CANAL	WSC	8Q			REGINA
29.	11AC063	HUFF LAKE NEAR VAL MARIE	WSC	8L			REGINA
30.	11AC066	HUFF LAKE PUMPING CANAL	WSC	8Q			REGINA
31.	05NA006	LARSEN RESERVOIR NEAR RADVILLE	WSC	8L			REGINA
32.	11AB083	LODGE CREEK BELOW MCRAE CREEK AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
33.	05NA003	LONG CREEK AT WESTERN CROSSING OF INTERNATIONAL BOUNDARY	WSC	12Q			REGINA
34.	05NB001	LONG CREEK NEAR ESTEVAN	WSC	12Q			REGINA
35.	05NB027	LONG CREEK NEAR NOONAN	WSC	12Q			REGINA
36.	11AB075	LYONS CREEK AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
37.	11AB044	MCKINNON DITCH NEAR CONSUL	WSC	8Q			REGINA
38.	11AB008	MIDDLE CREEK ABOVE LODGE CREEK	WSC	8Q			REGINA
39.	11AB001	MIDDLE CREEK BELOW MIDDLE CREEK RESERVOIR	WSC	8Q			REGINA
40.	11AB108	MIDDLE CREEK NEAR GOVENLOCK	WSC	8Q			REGINA
41.	11AB080	MIDDLE CREEK RESERVOIR	WSC	8L			REGINA
42.	11AB114	MIDDLE CREEK RESERVOIR BEDFORD OUTLET	WSC	8Q			REGINA
43.	11AB115	MIDDLE CREEK RESERVOIR FLOOD SPILLWAY	WSC	8Q			REGINA
44.	11AB113	MIDDLE CREEK RESERVOIR MAIN OUTLET	WSC	8Q			REGINA
45.	11AE008	MIDDLE FORK POPLAR RIVER AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
46.	05NC002	MOOSE MOUNTAIN LAKE (RESERVOIR) NEAR CORNING	WSC	12L			REGINA

SCHEDULE A

APR 01 1983

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL 3. INTERNATIONAL COMMITMENTS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
47.	11AB018	NASHLYN CANAL NEAR CONSUL	WSC	8Q			REGINA
48.	11AC054	NEWTON LAKE MAIN CANAL	WSC	8Q			REGINA
49.	11AC056	NEWTON LAKE NEAR VAL MARIE	WSC	8L			REGINA
50.	05NA009	RADVILLE INDEX RESERVOIR	WSC	8L			REGINA
51.	11AB058	RICHARDSON DITCH NEAR CONSUL	WSC	8Q			REGINA
52.	05NB016	ROUGHBARK RESERVOIR NEAR WEYBURN	WSC	8L			REGINA
53.	11AB020	SHEPHERD DITCH NEAR CONSUL	WSC	8Q			REGINA
54.	05NB021	SHORT CREEK NEAR ROCHE PERCEE	WSC	12Q			REGINA
55.	05ND001	SOURIS RIVER NEAR GLEN EWEN	WSC	12Q			REGINA
56.	05ND007	SOURIS RIVER NEAR SHERWOOD	WSC	12Q			REGINA
57.	11AB060	SPANGLER DITCH NEAR GOVENLOCK	WSC	8Q			REGINA
58.	11AB103	SQUAW COULEE NEAR WILLOW CREEK	WSC	8Q			REGINA
59.	05NB018	TATAGWA LAKE DRAIN NEAR WEYBURN	WSC	8Q			REGINA
60.	11AC068	VAL MARIE PUMP NO. 1	WSC	8Q			REGINA
61.	11AB084	VIDORA DITCH NEAR CONSUL	WSC	8Q			REGINA
62.	05NB024	WEYBURN INDEX RESERVOIR	WSC	8L			REGINA
63.	05NB020	WEYBURN RESERVOIR NEAR WEYBURN	WSC	12L			REGINA
64.	05NB011	YELLOW GRASS DITCH NEAR YELLOW GRASS	WSC	8Q			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1983-84
FEDERAL 3. INTERNATIONAL COMMITMENTS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
INTERNATIONAL				
	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	37	0.75	27.75
	12Q	8	1.00	8.00
TOTAL		64		41.10
GRAND TOTAL		64		41.10

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL 4. MAJOR NAVIGATIONAL IMPORTANCE

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	07MC003	LAKE ATHABASCA NEAR CRACKINGSTONE POINT	WSC	12L		REMOTE	PRINCE ALBERT

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1983-84
FEDERAL 4. MAJOR NAVIGATIONAL IMPORTANCE
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	1	0.40	0.40
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		1		0.40
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		1		0.40

SCHEDULE A

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SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL 7. NATIONAL STREAM INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	06CA004	BIGSTONE LAKE NEAR LA RONGE	WSC	12L			PRINCE ALBERT
2.	05KC001	CARROT RIVER NEAR SMOKY BURN	WSC	12Q			PRINCE ALBERT
3.	07LC002	CHIPMAN RIVER ABOVE BLACK LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
4.	06CD002	CHURCHILL RIVER ABOVE OTTER RAPIDS	WSC	12Q			PRINCE ALBERT
5.	06BB003	CHURCHILL RIVER NEAR PATUANAK	WSC	12Q		REMOTE	PRINCE ALBERT
6.	07CD006	CLEARWATER RIVER AT OUTLET OF LLOYD LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
7.	07LD001	CREE LAKE AT CABLE BAY	WSC	12L		REMOTE	PRINCE ALBERT
8.	07LD002	CREE RIVER AT OUTLET OF WAPATA LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
9.	06BA002	DILLON RIVER AT OUTLET OF DILLON LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
10.	07LE002	FOND DU LAC RIVER AT OUTLET OF BLACK LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
11.	06DA004	GEIKIE RIVER BELOW WHEELER RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
12.	07LE003	GREASE RIVER BELOW FONTAINE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
13.	06BD001	HAULTAIN RIVER ABOVE NORBERT RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
14.	07MB001	MACFARLANE RIVER AT OUTLET OF DAVY LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
15.	06CA001	MONTREAL RIVER AT OUTLET OF BIGSTONE LAKE	WSC	12Q			PRINCE ALBERT
16.	05KJ014	PASQUIA RIVER AT HIGHWAY NO. 9	WSC	8Q			PRINCE ALBERT
17.	07LC003	PORCUPINE RIVER AT OUTLET OF GROVE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
18.	05HD036	SWIFT CURRENT CREEK BELOW ROCK CREEK	WSC	12Q			REGINA
19.	06DA001	WOLLASTON LAKE AT ROSS CHANNEL	WSC	12L		REMOTE	PRINCE ALBERT

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1983-84
FEDERAL 7. NATIONAL STREAM INVENTORY
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	2	0.40	0.80
	8Q	0	0.75	0.00
	12Q	11	1.00	11.00
TOTAL		13		11.80
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	1	0.40	0.40
	8Q	1	0.75	0.75
	12Q	4	1.00	4.00
TOTAL		6		5.15
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		19		16.95

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL-PROVINCIAL

APR 01 1983

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	06AD011	ALCOTT CREEK ABOVE MEADOW LAKE	WSC	8Q			PRINCE ALBERT
2.	05KG003	AMISK LAKE NEAR FLIN FLON	WSC	12L			WINNIPEG
3.	05HC005	ANTELOPE CREEK NEAR CABRI	WSC	8Q			REGINA
4.	05NF010	ANTLER RIVER NEAR WAUCHOPE	WSC	8Q			REGINA
5.	05JH001	ARM RIVER NEAR BETHUNE	WSC	8Q			REGINA
6.	05MC001	ASSINIBOINE RIVER AT STURGIS	WSC	8Q			REGINA
7.	05JE005	AVONLEA CREEK NEAR ROULEAU	WSC	8Q			REGINA
8.	05KF001	BALLANTYNE RIVER ABOVE BALLANTYNE BAY	WSC	12Q			PRINCE ALBERT
9.	05FF001	BATTLE RIVER AT BATTLEFORD	WSC	8Q			PRINCE ALBERT
10.	05HA003	BEAR CREEK NEAR PIAPOT	WSC	8Q			REGINA
11.	06AG001	BEAVER RIVER BELOW WATERHEN RIVER	WSC	12Q			PRINCE ALBERT
12.	06AD001	BEAVER RIVER NEAR DORINTOSH	WSC	12Q			PRINCE ALBERT
13.	05EF005	BIG GULLY CREEK NEAR MAIDSTONE	WSC	8Q			PRINCE ALBERT
14.	05MA011	BIRCH CREEK NEAR ELFROS	WSC	8Q			REGINA
15.	05EG006	BIRLING CREEK NEAR PAYNTON	WSC	8Q			PRINCE ALBERT
16.	05HA015	BRIDGE CREEK AT GULL LAKE	WSC	8Q			REGINA
17.	05HG002	BRIGHTWATER CREEK NEAR KENASTON	WSC	8Q			REGINA
18.	05KB005	BURNTOUT BROOK NEAR ARBORFIELD	WSC	8Q			PRINCE ALBERT
19.	06BB005	CANOE RIVER NEAR BEAUVAL	WSC	12Q		REMOTE	PRINCE ALBERT
20.	05KB003	CARROT RIVER NEAR ARMLEY	WSC	8Q			PRINCE ALBERT
21.	05JF011	COTTONWOOD CREEK NEAR LUMSDEN	WSC	8Q			REGINA
22.	05HF014	CREIGHTON TRIBUTARY NEAR TOTNES	WSC	8Q			REGINA
23.	05HH002	CROMARTY CREEK NEAR BIRCH HILLS	WSC	8Q			PRINCE ALBERT

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL-PROVINCIAL

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
24.	05MB006	CROOKED HILL CREEK NEAR CANORA	WSC	8Q			REGINA
25.	05EG004	CRYSTAL CREEK NEAR IFFLEY	WSC	8Q			PRINCE ALBERT
26.	05KH002	CUMBERLAND LAKE NEAR CUMBERLAND HOUSE	WSC	12L			PRINCE ALBERT
27.	05JM015	CUTARM CREEK NEAR SPY HILL	WSC	8Q			REGINA
28.	07CD007	DESCHARME RIVER BELOW DUPRE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
29.	06AG002	DORE RIVER NEAR THE MOUTH	WSC	12Q		REMOTE	PRINCE ALBERT
30.	07MA003	DOUGLAS RIVER NEAR CLUFF LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
31.	05GC006	EAGLE CREEK NEAR ENVIRON	WSC	8Q			REGINA
32.	05LB002	ETOMAMI RIVER NEAR BERTWELL	WSC	8Q			PRINCE ALBERT
33.	05GA007	EYEHILL CREEK NEAR MACKLIN	WSC	8Q			PRINCE ALBERT
34.	05LB007	FIR RIVER NEAR HUDSON BAY	WSC	12Q			PRINCE ALBERT
35.	06CE001	FOSTER RIVER ABOVE CHURCHILL RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
36.	05NF013	GAINSBOROUGH CREEK NEAR STORTHOAKS	WSC	8Q			REGINA
37.	05GG010	GARDEN RIVER NEAR HENRIBOURG	WSC	8Q			PRINCE ALBERT
38.	05NA005	GIBSON CREEK NEAR RADVILLE	WSC	8Q			REGINA
39.	05KA009	GOOSEHUNTING CREEK NEAR BEATTY	WSC	8Q			PRINCE ALBERT
40.	05HF016	GREENLEIGH RESERVOIR NEAR BICKLEIGH	WSC	8L			REGINA
41.	05HB002	HAPPYLAND CREEK NEAR FOX VALLEY	WSC	8Q			REGINA
42.	11AE010	HAY MEADOW CREEK NEAR LISIEUX	WSC	8Q			REGINA
43.	05MA012	IRONSPRING CREEK NEAR WATSON	WSC	8Q			REGINA
44.	05JG014	ISKWAO CREEK NEAR CRAIK	WSC	8Q			REGINA
45.	05NB014	JEWEL CREEK NEAR GOODWATER	WSC	8Q			REGINA
46.	05JK004	JUMPING DEER CREEK NEAR LIPTON	WSC	8Q			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL-PROVINCIAL

APR 01 1983

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
47.	06BB004	KEELEY RIVER AT OUTLET OF KEELEY LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
48.	05JG015	KNOX COULEE NEAR TUXFORD	WSC	8Q			REGINA
49.	05HH003	KOHLESCHMIDT CREEK NEAR ROSTHERN	WSC	8Q			PRINCE ALBERT
50.	06CB001	LAC LA RONGE AT LA RONGE	WSC	12L			PRINCE ALBERT
51.	05JD004	LAKE OF THE RIVERS WEST INFLOW	WSC	8Q			REGINA
52.	05JJ003	LANIGAN CREEK ABOVE BOULDER LAKE	WSC	8Q			REGINA
53.	05KB006	LEATHER RIVER NEAR STAR CITY	WSC	8Q			PRINCE ALBERT
54.	05JH005	LEWIS CREEK NEAR IMPERIAL	WSC	8Q			REGINA
55.	05NF006	LIGHTNING CREEK NEAR CARNDUFF	WSC	8Q			REGINA
56.	05MC003	LILIAN RIVER NEAR LADY LAKE	WSC	8Q			REGINA
57.	05LB004	LOISELLE CREEK NEAR HUDSON BAY	WSC	8Q			PRINCE ALBERT
58.	05NA004	LONG CREEK NEAR MAXIM	WSC	8Q			REGINA
59.	05HF005	MACDONALD CREEK NEAR BOUNTY	WSC	8Q			REGINA
60.	05MA021	MAGNUSSON CREEK NEAR WYNYARD	WSC	8Q			REGINA
61.	06AD007	MAKWA RIVER AT RAPID VIEW	WSC	8Q			PRINCE ALBERT
62.	05LE011	MALONECK CREEK NEAR PELLY	WSC	8Q			REGINA
63.	05JA003	MCDONALD CREEK NEAR MCCORD	WSC	8Q			REGINA
64.	05HF015	MCDONALD TRIBUTARY NEAR TOTNES	WSC	8Q			REGINA
65.	05EF004	MONNERY RIVER NEAR PARADISE HILL	WSC	8Q			PRINCE ALBERT
66.	06CA005	MONTREAL LAKE NEAR MOLANOSA	WSC	12L			PRINCE ALBERT
67.	06CA003	MONTREAL RIVER AT HIGHWAY NO. 2	WSC	12Q			PRINCE ALBERT
68.	05JE001	MOOSE JAW RIVER ABOVE THUNDER CREEK	WSC	8Q			REGINA
69.	05JE004	MOOSE JAW RIVER NEAR ROULEAU	WSC	8Q			REGINA

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SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL-PROVINCIAL

APR 01 1983

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
70.	05NC001	MOOSE MOUNTAIN CREEK BELOW MOOSE MOUNTAIN LAKE	WSC	8Q			REGINA
71.	05ND004	MOOSE MOUNTAIN CREEK NEAR OXBOW	WSC	8Q			REGINA
72.	05NE002	MOOSOMIN RESERVOIR NEAR MOOSOMIN	WSC	8L			REGINA
73.	05JB007	MOSQUITO CREEK NEAR PAMBRUN	WSC	8Q			REGINA
74.	06BC001	MUDJATIK RIVER NEAR FORCIER LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
75.	05JB004	NOTUKEU CREEK ABOVE ADMIRAL RESERVOIR	WSC	8Q			REGINA
76.	05JB001	NOTUKEU CREEK NEAR VANGUARD	WSC	8Q			REGINA
77.	05GD002	OSCAR CREEK NEAR KRYDOR	WSC	8Q			PRINCE ALBERT
78.	07LE004	OTHERSIDE RIVER AT OUTLET OF MERCREDI LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
79.	06EA007	PAGATO RIVER AT OUTLET OF PAGATO LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
80.	05JL005	PHEASANT CREEK NEAR ABERNETHY	WSC	8Q			REGINA
81.	05JA004	PINTO CREEK NEAR WOODROW	WSC	8Q			REGINA
82.	05NE001	PIPESTONE CREEK NEAR MOOSOMIN	WSC	8Q			REGINA
83.	07LD003	PIPESTONE RIVER BELOW ROTARIU LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
84.	06BC002	PORTER LAKE AT CREW CABIN	WSC	12L		REMOTE	PRINCE ALBERT
85.	05MA020	QUILL CREEK NEAR QUILL LAKE	WSC	8Q			REGINA
86.	05MA014	RANCH CREEK NEAR ANNAHEIM	WSC	8Q			REGINA
87.	05LB005	RED DEER RIVER NEAR STEEN	WSC	8Q			PRINCE ALBERT
88.	05HF013	RIDALLS TRIBUTARY BELOW GREENLEIGH RESERVOIR	WSC	8Q			REGINA
89.	05JJ009	SALINE CREEK NEAR NOKOMIS	WSC	8Q			REGINA
90.	05KD003	SASKATCHEWAN RIVER BELOW TOBIN LAKE	WSC	12Q			PRINCE ALBERT
91.	05KH009	SASKATCHEWAN RIVER OLD CHANNEL	WSC	12Q			PRINCE ALBERT
92.	05LB006	SHAND CREEK NEAR DILLABOUGH	WSC	8Q			PRINCE ALBERT

SCHEDULE A

APR 01 1983

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL-PROVINCIAL

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
93.	05GF001	SHELL BROOK NEAR SHELLBROOK	WSC	8Q			PRINCE ALBERT
94.	05ME007	SMITH CREEK NEAR MARCHWELL	WSC	8Q			REGINA
95.	06CC001	SMOOTHSTONE RIVER BELOW EMMELINE LAKE	WSC	12Q			PRINCE ALBERT
96.	05HE001	SNAKEBITE CREEK NEAR BEECHY	WSC	8Q			REGINA
97.	05NB017	SOURIS RIVER NEAR HALBRITE	WSC	8Q			REGINA
98.	05NB009	SOURIS RIVER NEAR ROCHE PERCEE	WSC	8Q			REGINA
99.	05MB007	SPIRIT CREEK NEAR BUCHANAN	WSC	8Q			REGINA
100.	05MD010	STONY CREEK NEAR KAMSACK	WSC	8Q			REGINA
101.	05MC002	STONY CREEK NEAR STENEN	WSC	8Q			REGINA
102.	05GF002	STURGEON RIVER NEAR PRINCE ALBERT	WSC	8Q			PRINCE ALBERT
103.	05KG007	STURGEON-WEIR RIVER AT LEAF RAPIDS	WSC	12Q			PRINCE ALBERT
104.	05KB002	STURGEON-WEIR RIVER AT OUTLET OF AMISK LAKE	WSC	12Q			WINNIPEG
105.	05LE008	SWAN RIVER NEAR NORQUAY	WSC	12Q			REGINA
106.	05HD041	SWIFT CURRENT CREEK BELOW REID LAKE	WSC	12Q			REGINA
107.	05HD039	SWIFT CURRENT CREEK NEAR LEINAN	WSC	12Q	X		REGINA
108.	07QC002	TAZIN LAKE NEAR OUTLET	WSC	12L		REMOTE	PRINCE ALBERT
109.	05JG012	THUNDER CREEK NEAR DARMODY	WSC	8Q			REGINA
110.	06DB003	THYMEHILL RIVER BELOW MACKENZIE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
111.	05KE002	TORCH RIVER NEAR LOVE	WSC	12Q			PRINCE ALBERT
112.	05EG005	TURTLELAKE RIVER NEAR TURTLEFORD	WSC	8Q			PRINCE ALBERT
113.	05JF012	WASCANA CREEK BELOW KRONAU MARSH	SDOE	8Q			REGINA
114.	05JF004	WASCANA CREEK NEAR SEDLEY	WSC	8Q			REGINA
115.	05JF002	WASCANA LAKE AT MARINA	WSC	12L			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
FEDERAL-PROVINCIAL

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
116.	07LB001	WATERBURY LAKE AT CREW CABIN	WSC	12L		REMOTE	PRINCE ALBERT
117.	07LB002	WATERFOUND RIVER BELOW UNKNOWN LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
118.	06AF005	WATERHEN RIVER NEAR GOODSOIL	WSC	12Q			PRINCE ALBERT
119.	06DC001	WATHAMAN RIVER BELOW WATHAMAN LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
120.	06DA005	WHEELER RIVER BELOW RUSSELL LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
121.	05KE005	WHITE FOX RIVER NEAR GARRICK	WSC	8Q			PRINCE ALBERT
122.	05MB003	WHITESAND RIVER NEAR CANORA	WSC	8Q			REGINA
123.	05MB008	WHITESAND RIVER NEAR SPRINGSIDE	WSC	8Q			REGINA
124.	07MA004	WILLIAM RIVER ABOVE CARSWELL RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
125.	05MB005	WILLOW BROOK AT WILLOWBROOK	WSC	8Q			REGINA
126.	05JA002	WOOD RIVER NEAR LAFLECHE	WSC	8Q			REGINA
127.	05MB001	YORKTON CREEK NEAR EBENEZER	WSC	8Q			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1983-84
FEDERAL-PROVINCIAL
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	15	1.00	15.00
TOTAL		18		16.20
NORMAL ACCESS				
	8L	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	86	0.75	64.50
	12Q	15	1.00	15.00
TOTAL		108		82.00
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		126		98.20

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SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
PROVINCIAL

APR 01 1983

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05LA006	BARRIER RIVER BELOW BARRIER LAKE	WSC	8Q			PRINCE ALBERT
2.	05MA022	BECKETT BROOK NEAR FOAM LAKE	WSC	8Q			REGINA
3.	05MA010	BIG QUILL LAKE NEAR KANDAHAR	SDOE	8L			REGINA
4.	05KF004	BIG SANDY LAKE ON THE HANSON LAKE ROAD	SDOE	8L			REGINA
5.	05KH014	BIRCH RIVER MARSH NEAR CUMBERLAND HOUSE	DU	12L		REMOTE	PRINCE ALBERT
6.	05KH013	BIRCH RIVER NEAR MANITOBA BOUNDARY	SDOE	12Q		REMOTE	REGINA
7.	05KE006	BISSETT CREEK NEAR CHOICELAND	WSC	8Q			PRINCE ALBERT
8.	05HG014	BLACKSTRAP RESERVOIR AT SOUTH SIDE OF CAUSEWAY	SDOE	8L			REGINA
9.	05HG013	BRADWELL RESERVOIR AT PUMP STATION	SDOE	8L			REGINA
10.	05EG010	BRIGHTSAND LAKE NEAR ST WALBURG	SDOE	8L			REGINA
11.	05HG020	BRIGHTWATER CREEK NEAR PROCTOR LAKE	WSC	8Q			REGINA
12.	05HG006	BRIGHTWATER RESERVOIR AT RIPARIAN OUTLET	SDOE	8L			REGINA
13.	05HF017	BRODERICK RESERVOIR AT WEST EMBANKMENT	WSC	8L			REGINA
14.	05JE009	BROKENSHELL CREEK NEAR TROSSACHS	WSC	8Q			REGINA
15.	05KE008	CANDLE LAKE AT CANDLE LAKE	WSC	8L			PRINCE ALBERT
16.	05KA001	CARROT RIVER NEAR KINISTINO	WSC	8Q			PRINCE ALBERT
17.	06AD012	CHITEK LAKE AT CHITEK VILLAGE	SDOE	8L			REGINA
18.	05GG009	CHRISTOPHER LAKE NEAR CHRISTOPHER LAKE	SDOE	8L			REGINA
19.	05MC004	CONJURING CREEK NEAR PREECEVILLE	WSC	8Q			REGINA
20.	05KC002	CONNELL CREEK NEAR CONNELL CREEK	WSC	8Q			PRINCE ALBERT
21.	06AE002	COWAN LAKE NEAR HONEYMOON POINT	SDOE	8L			REGINA
22.	05FF003	CUTKNIFE CREEK NEAR CUTKNIFE	WSC	8Q			PRINCE ALBERT
23.	06AE004	DELARONDE LAKE NEAR BIG RIVER	SDOE	8L			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
PROVINCIAL

APR 01 1983

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
24.	05JJ008	DELLWOOD RESERVOIR AT PUMP STATION	SDOE	8L			REGINA
25.	05KF003	DESCHAMBAULT LAKE ON THE HANSON LAKE ROAD	SDOE	8L			REGINA
26.	05KB011	DOGHIDE RIVER NEAR RUNCIMAN	WSC	8Q			PRINCE ALBERT
27.	06AG003	DORE LAKE AT DORE LAKE	SDOE	8L			REGINA
28.	05LA003	DUCK CREEK NEAR KELVINGTON	WSC	8Q			PRINCE ALBERT
29.	05GC002	EAGLE CREEK NEAR ANGLIA	WSC	8Q			REGINA
30.	11AE014	EAST POPLAR RIVER ABOVE COOKSON RESERVOIR	WSC	8Q			REGINA
31.	05GG008	EMMA LAKE NEAR TWEEDSMUIR	SDOE	8L			REGINA
32.	05EF006	ENGLISHMAN RIVER NEAR SPRUCE LAKE	WSC	8Q			PRINCE ALBERT
33.	11AE016	FIFE LAKE NEAR LISIEUX	WSC	8L			REGINA
34.	05MB013	FISHING LAKE NEAR WADENA	SDOE	8L			REGINA
35.	05JC007	FLOWING WELL WEST INFLOW NEAR FLOWING WELL	WSC	8Q			REGINA
36.	11AE015	GIRARD CREEK NEAR CORONACH	WSC	8Q			REGINA
37.	05MB010	GOOD SPIRIT LAKE NEAR CANORA	SDOE	8L			REGINA
38.	05LB011	GREENWATER LAKE NEAR CHELAN	SDOE	8L			REGINA
39.	06AF010	GREIG LAKE NEAR DORINTOSH	SDOE	8L			REGINA
40.	05JF014	HUNTER CREEK NEAR RICHARDSON	WSC	8Q			REGINA
41.	05HG021	INVERNESS CREEK NEAR BRODERICK	WSC	8Q			REGINA
42.	05EG003	JACKFISH LAKE NEAR COCHIN	WSC	8L			PRINCE ALBERT
43.	05EG007	JACKFISH RIVER NEAR PRINCE	WSC	8Q			PRINCE ALBERT
44.	05KG010	JAN LAKE NEAR THE HANSON LAKE ROAD	SDOE	8L			REGINA
45.	05KE007	KELSEY CREEK NEAR GARRICK	WSC	8Q			PRINCE ALBERT
46.	05ND009	KENOSEE LAKE NEAR CARLYLE	WSC	8L			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
PROVINCIAL

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
47.	05LA007	KIPABISKAU LAKE NEAR MCKAGUE	SDOE	8L			REGINA
48.	06AF009	LAC DES ILES NEAR GOODSOIL	SDOE	8L			REGINA
49.	05HD028	LAC PELLETIER NEAR VESPER	WSC	8L			REGINA
50.	05HC004	LAKE DIEFENBAKER AT SASKATCHEWAN LANDING	WSC	8L			REGINA
51.	05JJ010	LANIGAN CREEK NEAR LANIGAN	WSC	8Q			REGINA
52.	05MB012	LAWRIE CREEK NEAR INSINGER	WSC	8Q			REGINA
53.	05KA011	LENORE LAKE NEAR MIDDLE LAKE	SDOE	8L			REGINA
54.	05KF002	LITTLE BEAR LAKE ON THE HANSON LAKE ROAD	SDOE	8L			REGINA
55.	05KB008	LITTLE BRIDGE CREEK NEAR ARMLEY	WSC	8Q			PRINCE ALBERT
56.	05JJ001	LITTLE MANITOU LAKE AT MANITOU BEACH	SDOE	8L			REGINA
57.	05MA002	LITTLE QUILL LAKE NEAR WYNYARD	SDOE	8L			REGINA
58.	05KE009	LOWER FISHING LAKE ON THE HANSON LAKE ROAD	SDOE	8L			REGINA
59.	05LB008	MACNAB CREEK NEAR SOMME	WSC	8Q			PRINCE ALBERT
60.	05LE012	MADGE LAKE NEAR KAMSACK	SDOE	8L			REGINA
61.	06AD014	MAKWA LAKE NEAR LOON LAKE	SDOE	8L			REGINA
62.	06AD009	MAKWA RIVER AT OUTLET OF MAKWA LAKE	WSC	8Q			PRINCE ALBERT
63.	05GA006	MANITO LAKE NEAR MARSDEN	SDOE	8L			REGINA
64.	05LB012	MAREAN LAKE NEAR CHELAN	SDOE	8L			REGINA
65.	06AD010	MEADOW RIVER BELOW MEADOW LAKE	WSC	12Q			PRINCE ALBERT
66.	05MA023	MILLIGAN CREEK NEAR WADENA	WSC	8Q			REGINA
67.	05JE002	MOOSE JAW RIVER NEAR LANG	WSC	8Q			REGINA
68.	06AD008	MORIN CREEK NEAR MEADOW LAKE	WSC	8Q			PRINCE ALBERT
69.	06AE003	MORIN LAKE NEAR VICTOIRE	SDOE	8L			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
PROVINCIAL

APR 01 1983

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
70.	05GB004	MUDDY LAKE INFLOW NEAR REVENUE	WSC	8Q			PRINCE ALBERT
71.	06CB003	NEMEIBEN LAKE NEAR LA RONGE	SDOE	8L			REGINA
72.	06AE001	NORBURY CREEK NEAR SPIRITWOOD	WSC	8Q			PRINCE ALBERT
73.	05GC007	OPUNTIA LAKE WEST INFLOW	WSC	8Q			REGINA
74.	05LD003	OVERFLOWING RIVER NEAR HUDSON BAY	WSC	8Q			PRINCE ALBERT
75.	05EG008	PAGE CREEK NEAR IFFLEY	WSC	8Q			PRINCE ALBERT
76.	05KG009	PELICAN LAKE AT PELICAN NARROWS	SDOE	8L			REGINA
77.	05HG003	PIKE LAKE NEAR SASKATOON	SDOE	8L			REGINA
78.	05LA004	PIPESTONE CREEK NEAR ROSE VALLEY	WSC	8Q			PRINCE ALBERT
79.	05LB010	PRAIRIE RIVER NEAR PRAIRIE RIVER	WSC	8Q			PRINCE ALBERT
80.	05GE001	RADOUGA CREEK NEAR BLAINE LAKE	WSC	8Q			PRINCE ALBERT
81.	05MA024	RANCH LAKE NEAR ST JAMES	SDOE	8L			REGINA
82.	05LA005	RED DEER RIVER NEAR ARCHERWILL	WSC	8Q			PRINCE ALBERT
83.	05GD003	REDBERRY LAKE NEAR KRYDOR	SDOE	8L			REGINA
84.	05MA016	ROMANCE CREEK NEAR WATSON	WSC	8Q			REGINA
85.	05JB002	RUSSELL CREEK NEAR VANGUARD	WSC	8Q			REGINA
86.	05JB006	RUSSELL CREEK RESERVOIR	WSC	8L			REGINA
87.	05HG008	S.S.E.P. EAST MAIN CANAL BELOW BLACKSTRAP RESERVOIR	WSC	8Q			REGINA
88.	05HG004	S.S.E.P. EAST MAIN CANAL BELOW BRIGHTWATER RESERVOIR	WSC	8Q			REGINA
89.	05HG019	S.S.E.P. EAST MAIN CANAL BELOW BRODERICK RESERVOIR	WSC	8Q			REGINA
90.	05HG009	S.S.E.P. EAST MAIN CANAL BELOW ZELMA RESERVOIR	WSC	8Q			REGINA
91.	05JG001	SANDY CREEK NEAR CARON	WSC	8Q			REGINA
92.	05GF004	SHELL LAKE NEAR SHELL LAKE	SDOE	8L			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
PROVINCIAL

APR 01 1983

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
93.	05HC002	SNIPE LAKE NEAR ESTON	WSC	8L			REGINA
94.	05HC003	SNIPE LAKE NORTH INFLOW	WSC	8Q			REGINA
95.	05NB031	SOURIS RIVER NEAR BECHARD	WSC	8Q			REGINA
96.	05NB025	SOURIS RIVER NEAR LEWVAN	WSC	8Q			REGINA
97.	05NB030	SOURIS RIVER NEAR MCTAGGART	WSC	8Q			REGINA
98.	05HF004	SOUTH SASKATCHEWAN RIVER BELOW GARDINER DAM	WSC	12L			REGINA
99.	05GF003	STURGEON LAKE NEAR PRINCE ALBERT	SDOE	8L			REGINA
100.	05KD004	TOBIN LAKE AT SQUAW RAPIDS SPILLWAY	SDOE	12L			REGINA
101.	05EG009	TURTLE LAKE NEAR GLASLYN	SDOE	8L			REGINA
102.	05HF022	UNNAMED CREEK NEAR CUTBANK	WSC	8Q			REGINA
103.	05MB011	VAN PATTENS CREEK NEAR KUROKI	WSC	8Q			REGINA
104.	05HH004	WAKAW LAKE NEAR WAKAW	SDOE	8L			REGINA
105.	05KA010	WALDSEA LAKE NEAR HUMBOLDT	SDOE	8L			REGINA
106.	06AF007	WATERHEN LAKE NEAR DORINTOSH	SDOE	8L			REGINA
107.	05ND008	WHITE BEAR (CARLYLE) LAKE NEAR CARLYLE	WSC	8L			REGINA
108.	05JE008	WILCOX MAIN DITCH NEAR WILCOX	WSC	8Q			REGINA
109.	05JD005	WILLOWS COULEE RESERVOIR NEAR ASSINIBOIA	WSC	8L			REGINA
110.	05JC006	WIWA CREEK NEAR ST. BOSWELLS	WSC	8Q			REGINA
111.	05JC005	WOOD RIVER DIVERSION TO CHAPLIN LAKE	WSC	8Q			REGINA
112.	05MB014	YORK LAKE NEAR YORKTON	SDOE	8L			REGINA
113.	05HG012	ZELMA RESERVOIR AT PUMP STATION	SDOE	8L			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1983-84
PROVINCIAL
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
NORMAL ACCESS				
	8L	11	0.25	2.75
	12L	1	0.40	0.40
	8Q	53	0.75	39.75
	12Q	1	1.00	1.00
TOTAL		66		43.90
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		66		43.90

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
DATA CONTRIBUTED BY OTHER AGENCY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	11AE009	ROCK CREEK BELOW HORSE CREEK NEAR INTERNATIONAL BOUNDARY	USGS	12Q			HELENA

SCHEDULE A

APR 01 1983

SASKATCHEWAN WATER QUANTITY STATIONS
1983-84
DATA CONTRIBUTED BY SASKATCHEWAN

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05HG016	BRIGHTWATER CREEK BELOW BRIGHTWATER RESERVOIR	SDOE	8Q			REGINA
2.	06BA001	CHURCHILL LAKE AT BUFFALO NARROWS	CRPC	12L			WINNIPEG
3.	06DB002	REINDEER RIVER AT OUTLET OF REINDEER LAKE	CRPC	12Q		REMOTE	WINNIPEG
4.	05HG010	S.S.E.P. BRADWELL INLET CANAL ABOVE BRADWELL RESERVOIR	SDOE	8Q			REGINA
5.	05JJ006	S.S.E.P. DIVERSION TO LITTLE MANITOU LAKE	SDOE	8Q			REGINA
6.	05HG005	S.S.E.P. MAIN CANAL ABOVE BLACKSTRAP RESERVOIR	SDOE	8Q			REGINA
7.	05HG007	S.S.E.P. MAIN CANAL ABOVE BRIGHTWATER RESERVOIR	SDOE	8Q			REGINA
8.	05HG011	S.S.E.P. MAIN CANAL ABOVE ZELMA RESERVOIR	SDOE	8Q			REGINA
9.	05JJ007	S.S.E.P. MAIN CANAL AT INLET TO DELLWOOD RESERVOIR	SDOE	8Q			REGINA
10.	05JJ005	S.S.E.P. MAIN CANAL OUTLET OF MANITOU PUMPING STATION	SDOE	8Q			REGINA

SASKATCHEWAN WATER QUANTITY NETWORK
STATIONS OPERATED BY WATER SURVEY OF CANADA
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1983-84

APR 01 1983

CLASSIFICATION	TYPE	NO. OF STATIONS	CONVERSION	UNITS
FEDERAL				
REMOTE ACCESS	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	13	1.00	13.00
		16		14.20
NORMAL ACCESS	8L	8	0.25	2.00
	12L	10	0.40	4.00
	8Q	17	0.75	12.75
	12Q	23	1.00	23.00
		58		41.75
INTERNATIONAL	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	37	0.75	27.75
	12Q	8	1.00	8.00
		64		41.10
TOTAL		138		97.05
FEDERAL-PROVINCIAL				
REMOTE ACCESS	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	15	1.00	15.00
		18		16.20
NORMAL ACCESS	8L	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	86	0.75	64.50
	12Q	15	1.00	15.00
		108		82.00
TOTAL		126		98.20
PROVINCIAL				
NORMAL ACCESS	8L	11	0.25	2.75
	12L	1	0.40	0.40
	8Q	53	0.75	39.75
	12Q	1	1.00	1.00
TOTAL		66		43.90
GRAND TOTAL		330		239.15

SCHEDULE B

ANNUAL PAYMENTS - ITEMS TO BE INCLUDED

The items to be included in computing the annual payments of water quantity survey stations are:

I OPERATIONAL COST WATER QUANTITY SURVEY STATIONS EXCLUDING SEDIMENT

a) Salaries and overtime of field personnel and casual labour;

b) Field travel expenses, board and lodging costs for field personnel;

c) The computer costs associated with computing daily mean hydrometric data;

d) Observer pay;

e) Depreciation, operation and maintenance of vehicles and boats

f) Maintenance of gauging station structures including material and labour for minor repairs;

g) Maintenance and depreciation of all field equipment and instruments (except as noted in Article VII of this agreement);

h) Fuels such as propane for heating recorder installations and gas such as nitrogen for operating pressure sensing equipment, electricity charges;

i) Rental of aircraft, vehicles, boats, etc. supplied by either party or chartered;

j) The annual cost of land leases;

k) Services, e.g. cost of establishing gas caches, operation of line cabins, etc.

II OPERATIONAL COST SEDIMENT STATIONS

All items in I OPERATIONAL COST plus:

l) The computer costs associated with computing daily mean sediment data;

m) Cost of analysis of sediment samples.

III NEW CONSTRUCTION REPAIR AND MAJOR RECONSTRUCTION COSTS FOR WATER QUANTITY SURVEY STATIONS:

a) Salaries and overtime of construction personnel;

b) Field travel expenses, board and lodging costs of construction personnel;

c) Depreciation, operation and maintenance of vehicles;

d) Construction materials;

e) Maintenance, depreciation and operation of construction equipment;

f) Rental of aircraft, vehicles, boats, construction equipment, etc. supplied by either party or chartered;

g) Land acquisition costs including legal survey costs;

h) Construction contract payments.

SCHEDULE C

PROCEDURES FOR PREPARATION OF ANNUAL PAYMENTS

a) The annual payment is composed of two parts; the annual operating costs and the costs of construction for streamflow and water level installations and sediment installations.

b) The annual payment shall be computed for each year the agreement is in effect.

c) Cost data to be used as a basis for computing each annual payment will be the cost data from the latest available full fiscal year.

d) A cost index factor is to be used in computing the annual payment for the year in question commensurate with sound engineering practice.

e) The average annual unit costs for operating water quantity survey stations listed in Schedule A but not including sediment stations will be determined from the cost data of c) above and where necessary, because of significant differences in transportation costs, these average annual unit costs will be computed for more than one area or condition of operation.

f) The total annual operation cost of the water quantity survey station listed in Schedule A but not including sediment stations will be the summation of the appropriate average annual unit cost for each station multiplied by the cost index factor as determined in item d) above.

g) The total annual operation cost of the sediment stations listed in Schedule A will be the summation of the annual operating cost for each station multiplied by the cost index factor as determined in item d) above.

h) The construction cost to be apportioned in accordance with Articles II, III and IV will be the summation of the construction cost for each new, or reconstructed water quantity survey station. The entire cost of construction is to be included in the annual payment. Construction costs are to be determined using data from reconnaissance surveys, standard plans, etc. and incorporating and cost index factor from item d) above.

i) In cases where there is a significant deviation between the cost determined in f), g) and h) and actual costs because of the cost index factor used, or changes in the construction program due to unforeseen circumstances such as flooding, an adjustment may be made in the final quarterly payment (March 1st) or the next fiscal year to more accurately reflect the cost shares of the parties to this agreement.

SCHEDULE D - MEMORANDUM OF AGREEMENT

SASKATCHEWAN HYDROMETRIC SURVEYS

1983-84

This schedule is a summary of the annual payment. The details of the calculations for operation and construction costs are available and have been jointly reviewed by the officers of each party.

ANNUAL PAYMENT for 1983-84 TO BE PAID TO CANADA BY SASKATCHEWAN

		Operation	Construction*	Total
a)	Streamflow and water level installations	360 000	50 000	410 000
b)	Sediment installations	-	-	-
	TOTAL			$410 000

*Saskatchewan's share of maintenance, upgrading and construction of hydrometric gauging stations.

S.R. Blackwell
Executive Director
Water Management Service
Administrator for Saskatchewan

D.A. Davis
Regional Director
Inland Waters Directorate
Administrator for Canada

APPENDIX IV

STATION CHANGES TO 1984-85

SCHEDULE A

AND

COMPUTATION OF 1984-85

SCHEDULE D

STATION CHANGES TO SCHEDULE A - SASKATCHEWAN FROM 1983-84 TO 1984-85

DISCONTINUE OPERATION

05KH008	Saskatchewan River near Manitoba Boundary	Fed 2 12Q remote
11AB113	Middle Creek Reservoir Main Outlet	Fed 3 8Q
06BC002	Porter Lake at Crew Cabin	Fed-Prov 12L remote

CHANGE IN OPERATIONAL RESPONSIBILITY

05JF012	Wascana Creek below Kronau Marsh from operated by SDOE to operated by WSC	Fed-Prov 8Q

CHANGES IN LOCATION

06CA005	Montreal Lake near Molanosa	Fed-Prov 12L
to 06CA006	Montreal Lake near Weyakwin	Fed-Prov 12L

CHANGE IN STATION NUMBER

05KB002	Sturgeon-Weir River at Outlet of Amisk Lake	Fed-Prov 12Q
to 05KG002	Sturgeon-Weir River at Outlet of Amisk Lake	Fed-Prov 12Q
05JF002	Wascana Lake at Marina	Fed-Prov 12L
to 05JF015	Wascana Lake at Marina	Fed-Prov 12L
05HH004	Wakaw Lake near Wakaw	Prov 8L
to 05KA012	Wakaw Lake near Wakaw	Prov 8L

ESTIMATED COST FOR SCHEDULE D - SASKATCHEWAN 1984-85

A Hydrometric Station

	No. of Stations	No. of Units	Unit* Cost	Approx Total Cost	Provincial Share
Federal					
Normal Access	58	41.75	3720	155 300	0
Remote Access	15	13.20	7700	101 600	0
International	63	40.35	4640	187 200	0
Sub Total	136	95.30		444 100	0
Federal-Provincial					
Normal Access	109	82.75	3720	307 800	153 900
Remote Access	17	15.80	7700	121 600	60 800
International	0	0	4640	0	0
Sub Total	126	98.55		429 400	214 700
Provincial					
Normal Access	66	43.90	3720	163 300	163 300
Remote Access	0	0	7700	0	0
International	0	0	4640	0	0
Sub-Total	66	43.90		163 300	163 300
Total	328	237.75		1 036 800	378 000

B Construction:

a) Streamflow and water level installations	50 000

Total Provincial Share = 378 000 + 50 000 = 428 000

*5% increase over estimated 1983-84 costs

STATION CHANGES TO SCHEDULE A - SASKATCHEWAN FROM 1983-84 TO 1984-85

DISCONTINUE OPERATION

05KH008	Saskatchewan River near Manitoba Boundary	Fed 2 12Q remote
11AB113	Middle Creek Reservoir Main Outlet	Fed 3 8Q
06BC002	Porter Lake at Crew Cabin	Fed-Prov 12L remote

CHANGE IN OPERATIONAL RESPONSIBILITY

05JF012	Wascana Creek below Kronau Marsh from operated by SDOE to operated by WSC	Fed-Prov 8Q

CHANGES IN LOCATION

	06CA005	Montreal Lake near Molanosa	Fed-Prov 12L
to	06CA006	Montreal Lake near Weyakwin	Fed-Prov 12L

CHANGE IN STATION NUMBER

	05KB002	Sturgeon-Weir River at Outlet of Amisk Lake	Fed-Prov 12Q
to	05KG002	Sturgeon-Weir River at Outlet of Amisk Lake	Fed-Prov 12Q
	05JF002	Wascana Lake at Marina	Fed-Prov 12L
to	05JF015	Wascana Lake at Marina	Fed-Prov 12L
	05HH004	Wakaw Lake near Wakaw	Prov 8L
to	05KA012	Wakaw Lake near Wakaw	Prov 8L

ESTIMATED COST FOR SCHEDULE D - SASKATCHEWAN 1984-85

A Hydrometric Station

	No. of Stations	No. of Units	Unit* Cost	Approx Total Cost	Provincial Share
Federal					
Normal Access	58	41.75	3720	155 300	0
Remote Access	15	13.20	7700	101 600	0
International	63	40.35	4640	187 200	0
Sub Total	136	95.30		444 100	0
Federal-Provincial					
Normal Access	109	82.75	3720	307 800	153 900
Remote Access	17	15.80	7700	121 600	60 800
International	0	0	4640	0	0
Sub Total	126	98.55		429 400	214 700
Provincial					
Normal Access	66	43.90	3720	163 300	163 300
Remote Access	0	0	7700	0	0
International	0	0	4640	0	0
Sub-Total	66	43.90		163 300	163 300
Total	328	237.75		1 036 800	378 000

B Construction:

a) Streamflow and water level installations	50 000

Total Provincial Share = 378 000 + 50 000 = 428 000

*5% increase over estimated 1983-84 costs

APPENDIX V

GUIDELINES FOR DESIGNATING FEDERAL AND PROVINCIAL RESPONSIBILITY FOR WATER QUANTITY STATIONS

August 3, 1977

GUIDELINES FOR DESIGNATING FEDERAL AND PROVINCIAL RESPONSIBILITY FOR WATER QUANTITY SURVEY STATIONS

The guidelines have been prepared in compliance with the Memoranda of Agreement between Canada and the Provinces in order to determine and review the designation of water quantity survey stations. The assignment of station designations is the responsibility of each Co-ordinating Committee established under the Memoranda of Agreement.

The intent of these guidelines is to provide a means by which responsibility for water quantity survey stations will be designated throughout Canada in a uniform and consistent manner. Water quantity survey stations as used in these guidelines has the same definition as in the Memorandum of Agreement and includes streamflow, water level and sediment survey stations. The word "stations" used in these guidelines means "water quantity survey stations".

FEDERAL STATIONS

The stations under these guidelines support programs of primary interest to the Government of Canada.

1. Federal Departmental Programs

Stations which are required for programs of various federal government departments where water quantity information on inland waters is required in support of specific projects or management responsibilities. Normally stations in this category would be the result of a specific request from another federal government department (e.g. MOT, DPW) or from statutory programs within Fisheries and Environment Canada (e.g. Canada Water Act, Fisheries Act, Migratory Birds Convention Act, etc.). Costs will normally be borne by the requesting agency. A station may also be designated under this guideline, where by formal agreement the federal government has accepted the responsibility for the continued operation of the station under an implementation agreement.

2. Interprovincial Rivers

Stations which are required for monitoring of streams flowing across or forming provincial or provincial-territorial boundaries where federal responsibility has been established by an agreement or where both the federal government and provincial governments recognize that there is or could be a trans-boundary management or jurisdictional problem.

3. International Commitments

Stations which are associated with federal responsibilities arising from international agreements, treaties, orders or studies.

a) Where the International Joint Commission (IJC) issues orders governing the control of waters crossing or forming part of international boundaries and stipulates the installation and monitoring of water quantity survey stations.

b) Stations which are not specifically stipulated under IJC orders but are required to support orders of the IJC.

c) International treaties and agreements which involve the use of waters crossing or forming part of an international boundary and specifically stipulate the reaches of streams required to be monitored or stipulate that special arrangements be made to meet water quantity survey needs.

d) Studies arising from federal responsibilities under the Boundary Waters Treaty which require the establishment of water quantity stations. These studies may be unilateral or bilateral and undertaken in anticipation of the need for formal studies.

e) Transboundary streams which require monitoring for management purposes.

4. Water Bodies of Navigational Importance

Stations which are operated for federal government departments and are normally covered by internal cost sharing arrangements in carrying out responsibilities relating to maintenance of navigational channels, construction of training works, prediction and controlling of water levels in navigable streams or lakes. A water quantity survey station located on a stream classified navigable under the Navigable Waters Protection Act is not automatically included in this guideline.

5. Nationally Funded Hydrologic Research Programs

Stations which support international and nationally funded hydrologic research programs.

6. Basin Studies

This guideline normally covers stations only for an interim period. Stations are included for the period of a study where federal responsibility has been established under the terms and conditions of a study agreement between the federal and provincial governments. Where the responsibility for monitoring was federal during the study and where it is known that the implementation stage will proceed under a federal-provincial agreement the guideline may be used as a holding category between completion of a study and implementation of study recommendations.

7. National River Inventory

The number of stations that can be operated to provide information for a national inventory will be limited to those required to assess major water quantity trends in the country and significant discharge to the ocean. Many stations under other federal guidelines perform a dual function and also form part of the national inventory.

This guideline includes stations within each province and territory that will provide an assessment of the total water resources available and a representative sampling on a national basis of the hydrologic regimes in Canada giving consideration to geographic and climatic variability, basin size, streamflow regime, relationship to major groundwater resources and length of record.

FEDERAL-PROVINCIAL STATIONS

The stations under these guidelines support programs which are of interest to the governments of both Canada and the Provinces.

1. Federal-Provincial Agreements

Stations are included where joint federal and provincial responsibility is established under the terms and conditions of an agreement between federal and provincial governments. Following the completion of federalprovincial water resources study and implementation agreements a station will also be designated under this guideline, where responsibility for the continued operation of the station would be in the joint interest of both Canada and the Province.

2. River Basin Development

Stations are included where both the federal and provincial governments have stated an interest in the need for information to develop a river basin.

PROVINCIAL STATIONS

Stations which are required for provincial programs where water quantity information on inland waters is required in support of specific projects or management activity. Normally, such station designations would be the result of a specific request from the provincial government.