Environment Canada
Water Resources Branch
Saskatchewan District

Environnement Canada
Direction des ressources en eau
Saskatchewan District

Canada

WATER
RESOURCES
BRANCH
SASKATCHEWAN DISTRICT

CANADA - SASKATCHEWAN

MEMORANDUM OF AGREEMENT

FOR

WATER QUANTITY SURVEYS

ANNUAL REPORT 1989-1990

CANADA - SASKATCHEWAN

MEMORANDUM OF AGREEMENT

FOR

WATER QUANTITY SURVEYS

ANNUAL REPORT 1989-1990

Water Resources Branch
Saskatchewan District

April, 1991

TO: Mr. D.L. M°Leod
Administrator fo Saskatchewan

Mr. R.A. Halliday
Administrator for Canada

In accordance with Aricle 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 the fiscal year 1989-90.

Saskatchewan

A. B. Banga
Saskatchewan Water Corporation

Canada

R.G. Boals
Environment Canada

April, 1991

Regina, Saskatchewan

EXECUTIVE SUMMARY

The Canada-Saskatchewan Co-ordinating Committee met twice during the report year to discuss program activities. The items discussed included: financial status and outlook; sediment program activities; hydrometric network planning; monitoring requirements for the Rafferty/Alameda project; and the hydrometric construction program.

Drought conditions carried through from 1988 to 1989 for many areas of Saskatchewan. Extreme forest fire conditions in June and July caused the cancellation of two remote area field trips. Data computations and hydrometric field work were completed on schedule, except for the cancellation of the two remote area trips. Additional field work was required to monitor high flows in the extreme north, on the North Saskatchewan River, and an apportionment release on the Souris River.

Two Hydraulic and Morphologic surveys were completed at locations on the Qu'Appelle River and a national Hydraulic and Morphologic workshop was sponsored in Regina. Two sites were monitored as part of the Winter Measurement Project. Additional staff training was provided in geomorphology, defensive driving,first aid and cardio pulmonary resuscitation, transportation of dangerous goods and the Workplace Hazardous Materials Information System.

Eight stations were added to the hydrometric network on April 1, 1989. Hydrometric and sediment network planning activities continued during the year.

Maintenance and upgrading was completed at 66 locations. Construction expenditures during 1989-90 were $74 508 (federal) and $24 239 (provincial).

The federal share of the 1989-90 program was $902 383; the provincial share was $489 179. A provincial deficit carry-over of $30 882 from 1988-89, the purchase of DCPs for the province ($12 485) and a 1989-90 payment of $532 985 results in a provincial surplus of $439 for 1989-90 operations. The Schedule D costs for the 1990-91 fiscal year are estimated at $531 000.

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1.0 INTRODUCTION

This is the fifteenth annual report summarizing the activities of the Canada-Saskatchewan Coordinating Committee established by the Memorandum of Agreement for Water Quantity Surveys in 1975. The report contains brief summaries of the two Coordinating Committee meetings convened during the fiscal year ending March 31, 1990 as well as a summary of surface water conditions, hydrometric operations, construction activities and hydrometric network changes. Operational costs are summarized in Section 3 and detailed in Appendixes A and B. The Agreement, along with Schedules A, B, C and D which detail operational, administrative and cost-sharing arrangements, is included as Appendix D.

Details of the cost-sharing arrangements for 1989-90 are provided in the report. The federal share of 1989-90 program costs was $902 383; the provincial share was $489 179. A provincial deficit carry-over of $30 882 from 1988-89, the purchase of DCPs for the Province ($12 485), and a 1989-90 payment of $532 985 result in a provincial surplus of $439 for 1989-90 operations.

The costs for the 1990-91 fiscal year are estimated at $531 000.

2.0 SUMMARY OF ACTIVITIES

2.1 CANADA-SASKATCHEWAN COORDINATING COMMITTEE MEETINGS

The Canada-Saskatchewan Coordinating Committee met twice during the report year, on November 27, 1989 and on March 14, 1990 to discuss issues of mutual interest. The highlights are summarized in the following sections.

2.1.1 Coordinators' Meeting - November 27, 1989

The meeting was attended by Mr. A.B. Banga, the member for Saskatchewan, Mr. R.G. Boals the member for Canada, Mr. D. Euteneier, Saskatchewan Water Corporation, (Sask Water) Mr. D. Truelove, Sask Water, Mr. M. Renouf, Water Resources Branch (WRB) and Mr. B.N. Johnson, WRB.

The financial status for 1989-90 and the outlook for the next fiscal year were discussed at this meeting. It was estimated that Schedule D for 1990-91 would be $531 000.

The 1989-90 sediment and hydrometric program activities were highlighted. These included the field coverage of remote northern areas, monitoring requirements for the Rafferty/Alameda project, field coverage of an apportionment release from Boundary Reservoir, the completion of two Hydraulic and Morphologic surveys on the Qu'Appelle River, and the scheduled meeting of the

Technical Advisory Committee for the Saskatchewan Sediment Program on December 12, 1989.

Detailed cost summaries of the 1989-90 construction program were reviewed and major projects planned for the 1990-91 season were discussed.

Network planning activities were discussed with reference to distribution of the consultant's Hydrometric Network Overview Report, suggestions for future joint initiatives, the integrated network evaluation study of the Assiniboine River basin, and completion of station profiles for all provincially operated stations.

The progress of the development and implementation of the Canadian Direct Receive Ground Station system was discussed. It was recognized that the costs of operating the system would need to be reduced before the province would become a partner.

There were no proposed changes to Schedule A for the next fiscal year.

2.1.2 Coordinators' Meeting - March 14, 1990

The meeting was attended by Mr. A.B. Banga, the member for Saskatchewan, Mr. R.G. Boals, the member for Canada, Mr. D. Euteneier, Sask Water, Mr. D. Truelove, Sask Water, Mr. C.A. Brumwell, WRB and Mr. B.N. Johnson, WRB.

The 1989-90 construction program costs were reviewed and priorities were assigned to the 1990-91 construction program. Initial approval was given for expenditure of $25 050 for maintenance of the provincial network in 1990-91.

The proposed monitoring stations for the Rafferty/Alameda project were discussed. It was agreed that the Administrators of the Cost Share Agreement would need to meet to discuss monitoring requirements and funding arrangements for stations associated with this project.

The province reported that the Saskatchewan Power Corporation had expressed interest in establishing additional hydrometric stations in the Tazin River basin.

Cost increases in Schedule D for 1990-91 were discussed. Great concern was expressed regarding the impact of the salary agreement with the hydrometric staff on the ability of the province to maintain their portion of the hydrometric network at the present level.

Schedule D for 1990-91 was estimated at $501 000 for operations (including $1 000 for the sediment program) and $30 000 for construction. Signing of Schedule D was set aside until after the release of the March 29, 1990 provincial budget.

There would be no changes to Schedule A for the next fiscal year.

2.2 OPERATIONAL CONSIDERATIONS

2.2.1 Surface Water Conditions

Spring runoff volumes in 1989 were generally below normal throughout most of Saskatchewan. Some small southern streams recorded no runoff, while those that did record runoff peaked in late March and early April. Above normal runoff was recorded in the areas north of Lake Athabasca and west of Reindeer Lake. Record high measurements were taken on the Grease River in June.

Drought conditions carried through from 1988 into 1989 for many areas of Saskatchewan and most prairie streams went to zero flow by mid-June. A record low measurement was made on the Sturgeon Weir River in September. Flows on the North Saskatchewan River remained high throughout the summer as a result of heavy rainfall in Alberta.

2.2.2 Hydrometric Operations

Data computations and hydrometric field work were completed as scheduled during the year, except that two remote field area trips were cancelled because of extreme forest fire conditions during June and July. Record collection in the remote areas was not adversely affected by the cancellation of the trips, however, some routine maintenance and special activities were not done. Additional field coverage was required to monitor high flows on the North Saskatchewan River, runoff from localized heavy thunderstorms, and an apportionment release on the Souris River.

Considerable time and effort was spent to develop methods, train staff and conduct two Hydraulic and Morphologic (H&M) surveys at sites on the Qu'Appelle River. Because of this experience a national H&M Workshop was sponsored in September. Additional staff training was provided in geomorphology, defensive driving, first aid and Cardio Pulmonary Resuscitation, transportation of dangerous goods and the Workplace Hazardous Materials Information System (WHMIS).

2.2.3 Construction Activities

Sixty-six construction projects were completed during the fiscal year. The majority of these projects involved maintenance and upgrading activities designed to improve record quality and to maintain safety and operational standards. Maintenance was

carried out at 58 stations while station upgrading occurred at an additional 8 sites. No new stations were constructed.

The total cost of the 1989-90 construction program was $98 747. The provincial share of the cost was $24 239 and the federal share was $74 508. Details of the construction program are documented in the 1989-90 Saskatchewan Construction, Upgrading and Maintenance Annual Report.

2.2.4 Data Requests

During the 1989-90 fiscal year the Water Resources Branch answered 382 written and telephone requests for data and information. These requests were made by a wide range of clientele including federal and provincial government departments and agencies, private agencies, crown corporations, engineering and environmental consultants, universities, technical institutes, schools, municipal governments, the media, and private citizens.

A summary of some of the products and data provided includes 108 data publications, 80 maps of gauging station locations, 1 945 microfiche records containing 500 000 station-years of data, 111 peak discharges, 641 station-years of current year data and 184 miscellaneous requests. The miscellaneous requests ranged from canoeists asking about remote river conditions to schools wanting environmental and water related information.

A new and exciting product produced by the Water Resources Branch during 1989-90 was the entire WRB discharge and water level database (HYDAT) on optical disk (CD-ROM). This product will allow access, by personal computer, to historic data for the entire country. Several demonstrations of this product were conducted resulting in many agencies acquiring optical disk readers.

In addition to the products already mentioned, Water Resources Branch provided water level and streamflow data by computer link to agencies such as Sask Water soon after the data were collected. The data were used on an on-going basis to update the water level and streamflow forecasts for Saskatchewan.

2.3 NETWORK DEVELOPMENT

2.3.1 Network Changes for 1989-90

Schedule A of the Memorandum of Agreement identifies the operational and financial responsibility for hydrometric stations that comprise the water quantity network as of April 1 of each year. The Schedule also shows the type of data collected (flow, water level, sediment) and the period of operation (seasonal or annual). Decisions regarding changes to the Schedule are made by the Coordinating Committee with reference to the national designation guidelines for station classification. Network

changes as of April 1, 1989 are shown in Figure 1 and summarized as follows:

STATIONS ADDED TO THE NETWORK

Station Name	Station Number	Record	Designation
1. Abitau River above Cumming Lake	07QC005	12Q	P2 Remote
2. Crean Lake at the Warden Station	06CA008	8L	F1
3. Denniel Creek East Tributary near Val Marie	11AC073	8Q	F3
4. Kingsmere Lake at the Outlet Structure	06CA007	8L	F1
5. Waskesiu Lake at Waskesiu Lake	06CA002	8L	F1
6. Tazin River above Tazin Lake	07QC006	12Q	P2 Remote
7. Frenchman River at 50-Mile	11AC023	8Q	F3
8. Frenchman River below Val Marie	11AC051	8Q	F3

STATION NAME CHANGES

Station Name	Station Number	Changed to
1. Pipestone Creek above Moosomin Reservoir	05NE003	Pipestone Creek above Moosomin Lake
2. Tobin Lake at Squaw Rapids Spillway	05KD004	Tobin Lake at the Spillway

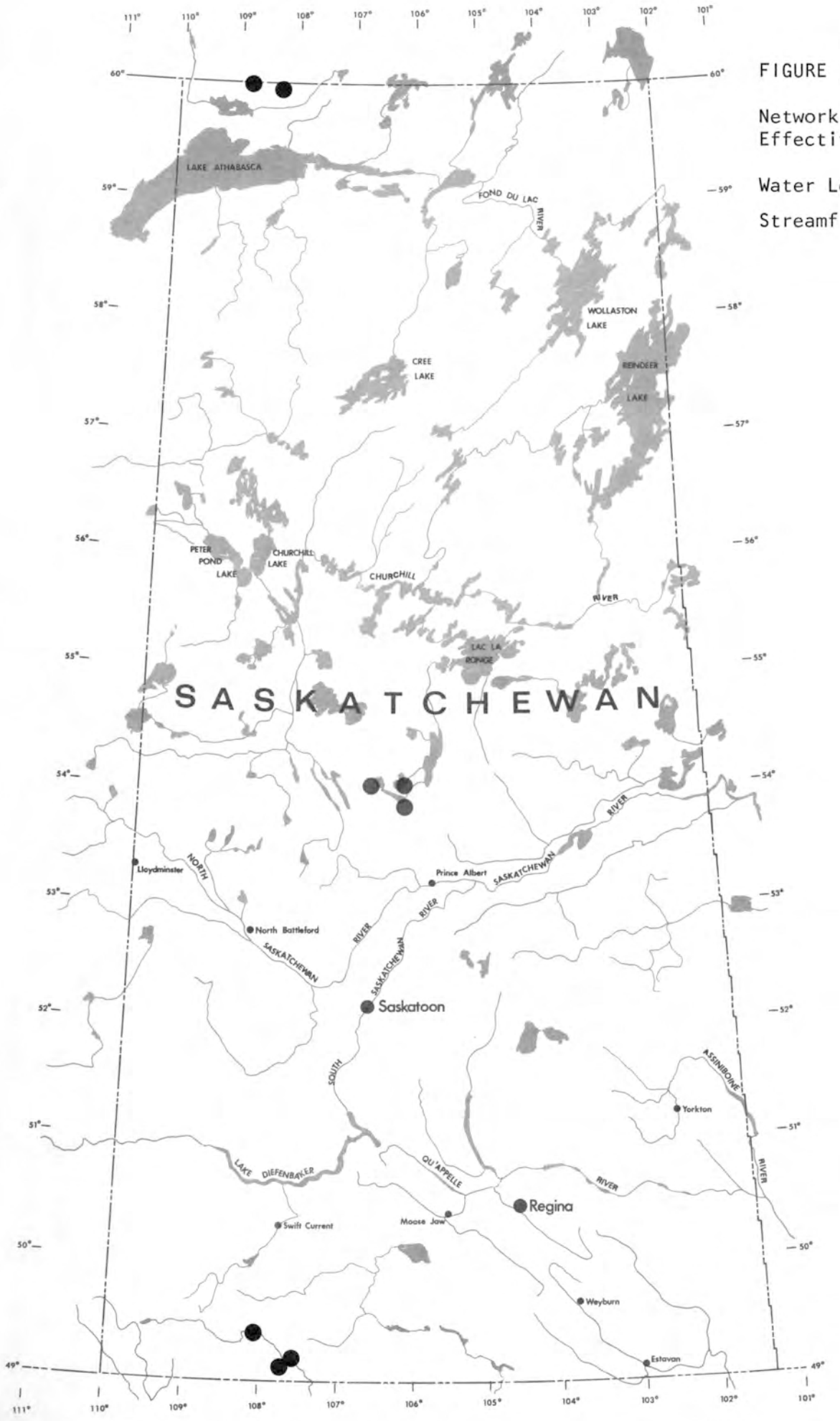


FIGURE 1:

Network Changes
Effective April 1, 1989

Water Level Gauge -

Streamflow Gauge -

2.3.2 Network Development in Saskatchewan

The historical development of the Saskatchewan hydrometric network and the annual increase in the streamflow database are shown in Figures 2 to 4. 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 twenty years.

The number of hydrometric stations operated within Saskatchewan has been relatively constant. Changes to the network from the inception of the cost-sharing agreement are illustrated 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
1984-85	0	0
1985-86	2	0
1986-87	2	8
1987-88	3	10
1988-89	0	4
1989-90	8	0
Total	122	64

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

The stations added to Schedule A over this period represent approximately 38% of the hydrometric network operated by WRB and Sask Water as of April 1, 1989, and the stations deleted from the Schedule represent 20% of the network.

In addition to the 186 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 decrease in the number of federal stations and an almost equal increase in federal-provincial stations. The federal stations represented 52% of the total network in 1975-76 and 45% in 1989-90 while the federal-provincial category represented 32% in 1975-76 and 38% in 1989-90. The provincial stations represented 16% of the network in 1975-76 and 17% in 1989-90. The provincial portion of the network was at its peak at 21% in 1985-86. Figure 5 illustrates the changing nature of designated responsibility of the hydrometric network operated by WRB since the inception of the cost-sharing agreement.

FIGURE 2:
HYDROMETRIC NETWORK DEVELOPMENT
IN SASKATCHEWAN

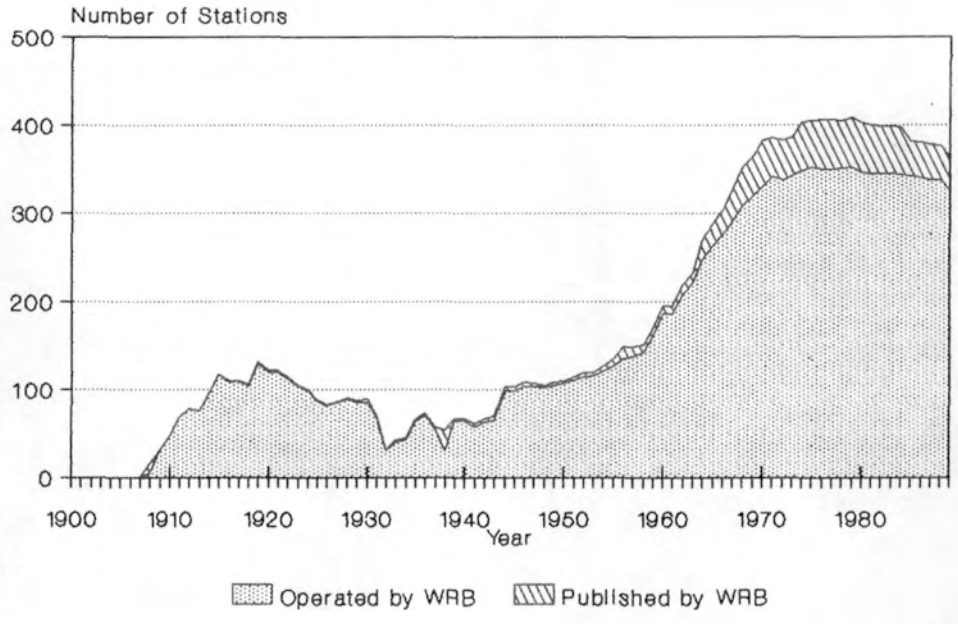


FIGURE 3:
DEVELOPMENT OF THE HYDROMETRIC NETWORK
OPERATED BY WRB IN SASKATCHEWAN

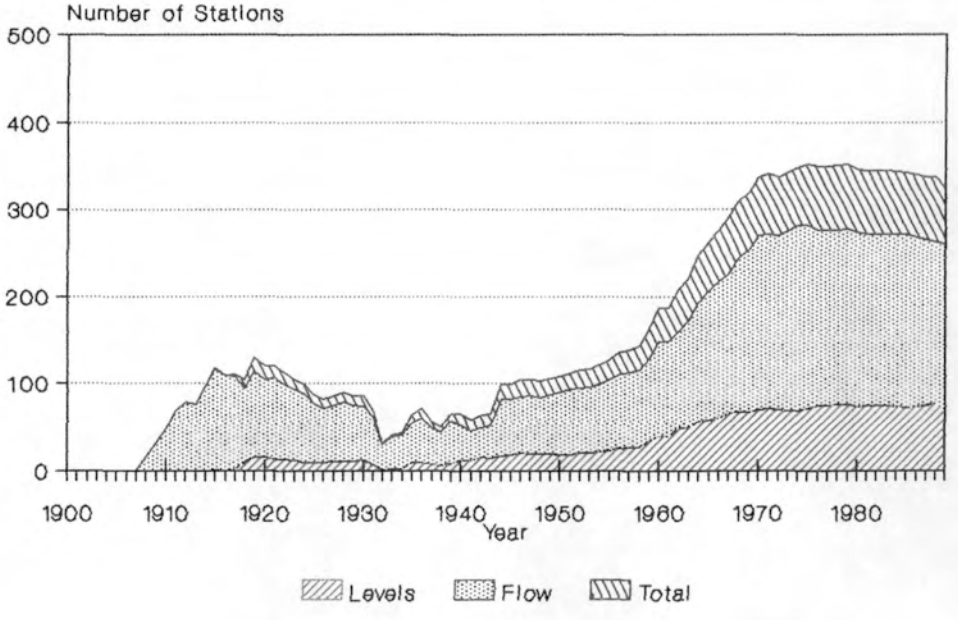


FIGURE 4:
CUMULATIVE STATION YEARS
OF HYDROMETRIC DATA IN SASKATCHEWAN

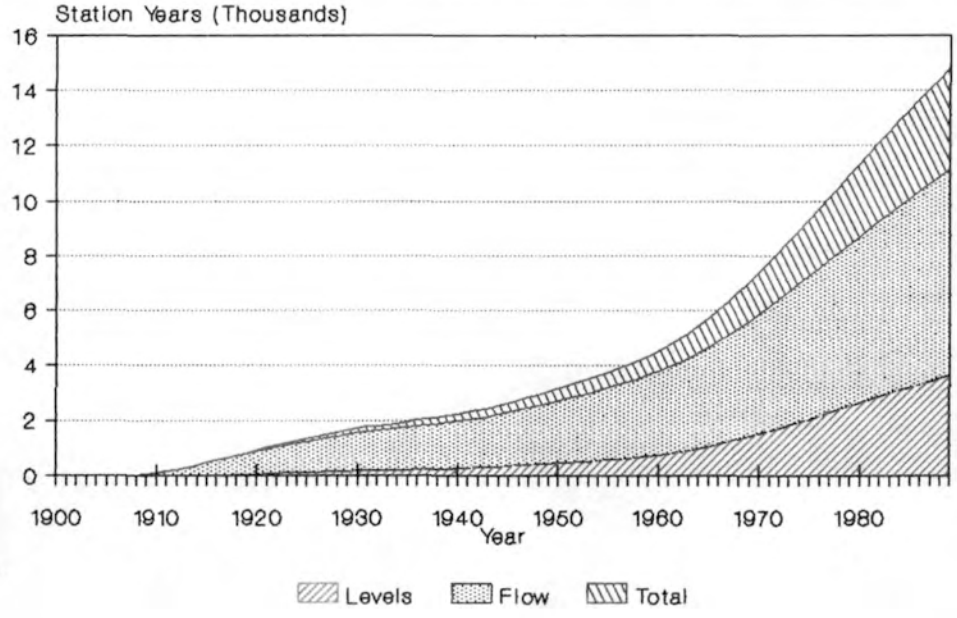
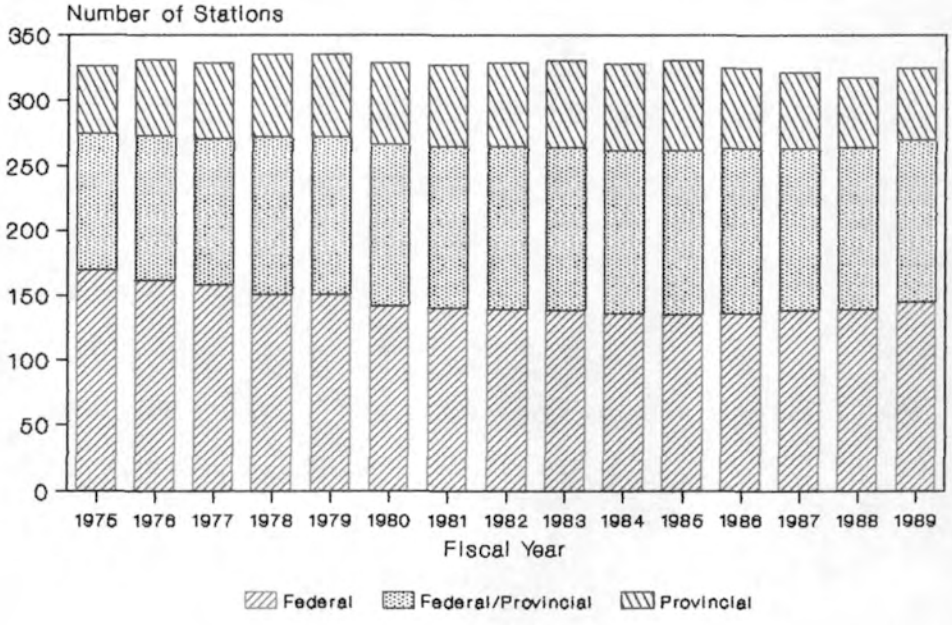


FIGURE 5:
HYDROMETRIC STATIONS OPERATED BY
WRB IN SASKATCHEWAN SINCE 1975



3.0 COST 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 as of April 1, 1989. Provincial stations operated by Sask Water and published by WRB are not considered because 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 (seasonal or annual) and with the type of data produced (water level only or water level and flow). 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 apply to normal, remote and international stations and are used by the four WRB offices within the Inland Waters Directorate, Western & Northern Region.

3.2 COST OF OPERATION: 1989-90

Station unit costs and total network costs for salary, operations and maintenance, and capital for 1989-90 are derived from the detailed program costs incorporated in Appendix A and are summarized in Table 2.

TABLE 1

SASKATCHEWAN WATER QUANTITY PROGRAM
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1989-90

CLASSIFICATION	TYPE*	NO. OF STATIONS**	CONVERSION	STATION 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	11	0.25	2.75
	12L	11	0.40	4.40
	8Q	18	0.75	13.50
	12Q	23	1.00	23.00
		63		43.65
International	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	39	0.75	29.25
	12Q	8	1.00	8.00
		66		42.60
Total		145		100.45
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	85	0.75	63.75
	12Q	15	1.00	15.00
		107		81.25
Total		125		97.45

continued ...

TABLE 1 (concluded)

Page #2

CLASSIFICATION	TYPE*	NO. OF STATIONS**	CONVERSION	STATION UNITS
Provincial				
Remote Access	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	4	1.00	4.00
		4		4.00
Normal Access	8L	10	0.25	2.50
	12L	2	0.40	0.80
	8Q	38	0.75	28.50
	12Q	1	1.00	1.00
		51		32.80
Total		55		36.80
Grand Total		325		234.70

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

** From Schedule A

TABLE 2

SASKATCHEWAN WATER QUANTITY PROGRAM
COST SUMMARY 1989-1990

Unit Cost Summary

STATION CLASSIFICATION	UNIT	SALARY $	OPERATIONS $	CAPITAL $	TOTAL $
Normal Access					
- Non-International	1.0	2 894	1 559	419	4 871
- International	1.0	3 617	1 163	419	5 199
Remote Access	1.0	2 894	5 472	419	8 784

Total Cost Summary

STATION CLASSIFICATION	NO. OF STATIONS	UNITS	SALARY $	OPERATIONS $	CAPITAL $	TOTAL $
Federal						
Remote	16	14.20	41 091	77 706	5 943	124 740
Normal						
- Non-International	63	43.65	126 310	68 039	18 267	212 616
- International	66	42.60	154 090	49 565	17 828	221 483
						558 839
Federal-Provincial						
Remote	18	16.20	46 878	88 650	6 780	142 308
Normal	107	81.25	235 113	126 647	34 003	395 763
						538 071
Provincial						
Remote	4	4.00	11 575	21 889	1 674	35 138
Normal	51	32.80	94 913	51 127	13 727	159 767
						194 905
Grand Total			709 970	483 623	98 222	1 291 815

Overall the person-year utilization for cost shared hydrometric surveys was slightly lower in 1989-90 than in the previous year. However, total hydrometric salary costs increased by 6.4% as the result of a new contract settlement with the hydrometric staff. Incremental back-pay for the period that the hydrometric staff was without a contract was paid separately and was not included within the cost-sharing agreement. The result of combining the total salary increase with the 5 station unit increase to the network was a unit salary cost increase of 4% in 1989-90 from 1988-89.

Total shareable program operations and maintenance (O&M) costs were 16% higher in 1989-90 compared to the previous year. The Parts and Consumable Tools category increased significantly because a large order of recorder, manometer, and current meter parts and equipment was received from the National Equipment Distribution Center; this had not been necessary in the previous year. Small cost increases were experienced in the Travel, Rentals and Purchased Repairs categories.

The most significant unit cost increase in 1989-90 was 8.6% for international stations. Salary increases accounted for one third of the increase while O&M costs accounted for the rest. The significant increase in O&M cost for international stations came as the result of re-distributing costs to more accurately reflect resource allocation. Normal access and remote station unit costs increased by 5.6% and 6.9% respectively over the previous fiscal year. The difference in increase

between normal and remote access stations is primarily the result of increases in aircraft charter rates.

Table 3 and Figure 6 summarize the shared costs for 1989-90. The federal share was $902 383 while the provincial share was $489 179. The provincial deficit from 1988-89 of $30 882, the purchase of DCPs for the province ($12 485) and the provincial payment for 1989-90 of $532 985 result in a provincial surplus of $439 for 1989-90 operations.

TABLE 3

SASKATCHEWAN WATER QUANTITY PROGRAM
SHARED COST SUMMARY 1989-1990
(From Table 2 & Construction Report)

FEDERAL SHARE = $558 839 + $\frac{\$538\ 071}{2}$	$827 875	
FEDERAL CONSTRUCTION SHARE	$ 74 508	
TOTAL FEDERAL SHARE		$902 383
PROVINCIAL SHARE = 194 905 + $\frac{538\ 071}{2}$	$463 940	
PROVINCIAL CONSTRUCTION SHARE	$ 24 239	
SEDIMENT ANALYSIS	$ 1 000	
PROVINCIAL HYDROMETRIC SHARE		$489 179
PURCHASE OF DCPs FOR PROVINCE	$ 12 485	
PROVINCIAL DEFICIT (FROM 1988-1989)	$ 30 882	
TOTAL OF OTHER PROVINCIAL COSTS		$ 43 367
TOTAL PROVINCIAL SHARE		$532 546
PROVINCIAL PAYMENT 1989-90		($532 985)
PROVINCIAL SURPLUS FOR 1989-90		$439

FIGURE 6:
HYDROMETRIC SURVEY PROGRAM
SHARED COST SUMMARY (1989-90)

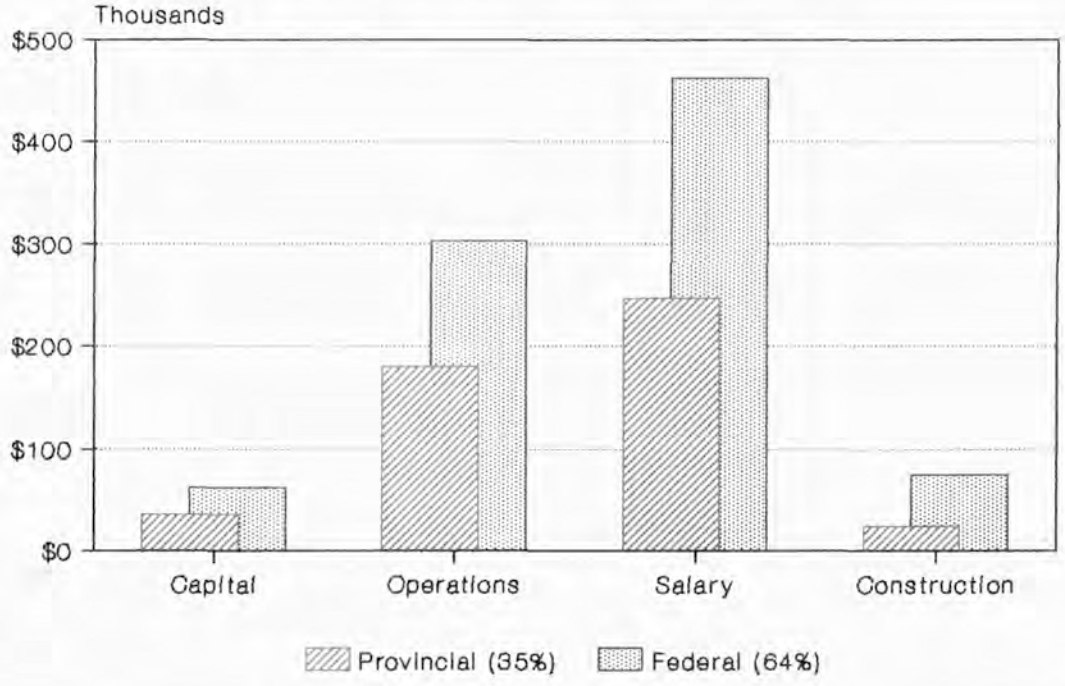


Table 4 and Figures 7 to 9 show the change (increase) in station-unit costs since the implementation of the cost sharing agreement in 1975.

3.3 COST ESTIMATES: 1990-91

Changes affecting the 1990-91 Schedule A and the computation of the 1990-91 Schedule D, estimate of $531 000, are contained in Appendix E.

TABLE 4

SASKATCHEWAN WATER QUANTITY PROGRAM
HISTORICAL SUMMARY OF STATION UNIT COSTS

FISCAL YEAR	NORMAL		INTERNATIONAL		REMOTE	
	COST	CHANGE*	COST	CHANGE*	COST	CHANGE
1975-76	$1 583	-	$1 810	-	$3 643	-
1976-77	$1 721	8.7%	$1 971	8.9%	$3 949	8.4%
1977-78	$1 928	12.0%	$2 220	12.6%	$4 213	6.7%
1978-79	$2 106	9.2%	$2 434	9.6%	$4 501	6.8%
1979-80	$2 200	4.5%	$2 791	14.7%	$4 631	2.9%
1980-81	$2 415	9.8%	$3 055	9.5%	$5 894	27.3%
1981-82	$3 067	27.0%	$3 852	26.1%	$5 993	1.6%
1982-83	$3 297	7.5%	$4 170	8.3%	$7 003	1.7%
1983-84**	$3 615	9.6%	$4 375	4.9%	$6 872	-1.9%
1984-85	$3 741	3.5%	$4 473	2.2%	$7 244	5.4%
1985-86	$4 063	8.6%	$4 808	7.5%	$7 277	0.5%
1986-87	$4 379	7.8%	$5 185	7.8%	$8 604	18.2%
1987-88	$4 435	1.3%	$5 141	-0.8%	$8 352	-2.9%
1988-89***	$4 612	4.0%	$4 783	-7.0%	$8 216	-1.6%
1989-90	$4 871	5.6%	$5 199	8.7%	$8 784	6.9%
1975-89	-	207.7%	-	187.2%	-	141.1%

Average percent increase for all stations since 1975-76 = 168.0%

* % = 100 x (year 2 - year 1)/year 1

** Method of calculation of station unit costs was modified from 1983-84 until 1987-88, so values may not be directly comparable.

*** Method of station unit costs was modified this year.

FIGURE 7:
CONVENTIONAL HYDROMETRIC STATION
AVERAGE ANNUAL OPERATING COSTS

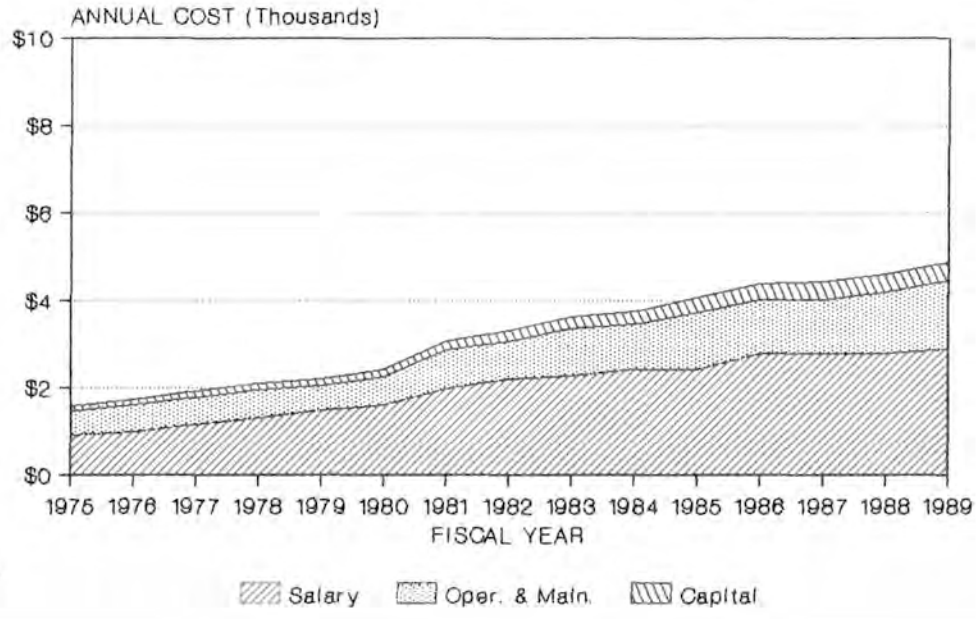


FIGURE 8:
REMOTE HYDROMETRIC STATION
AVERAGE ANNUAL OPERATING COSTS

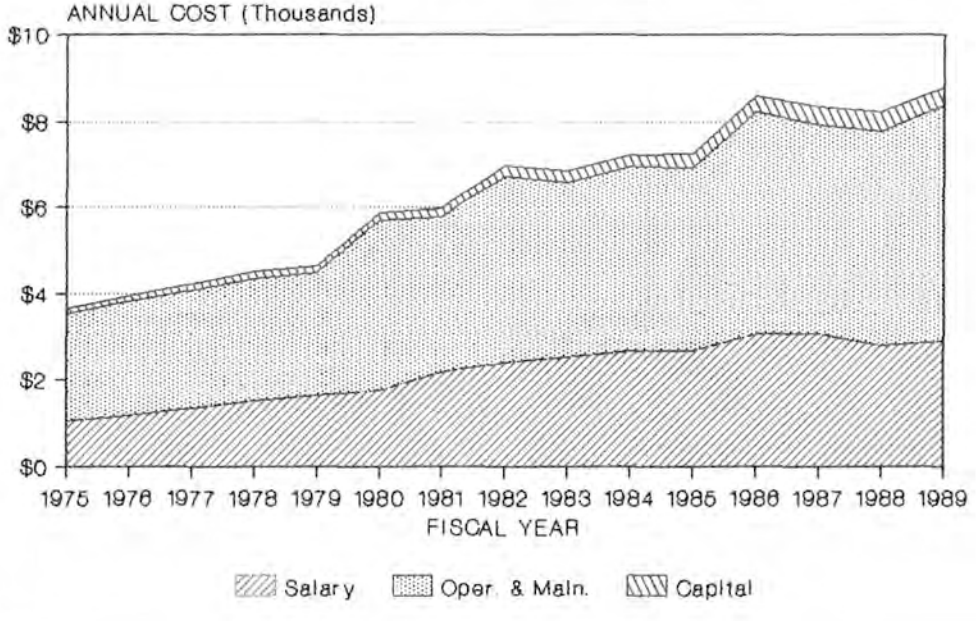
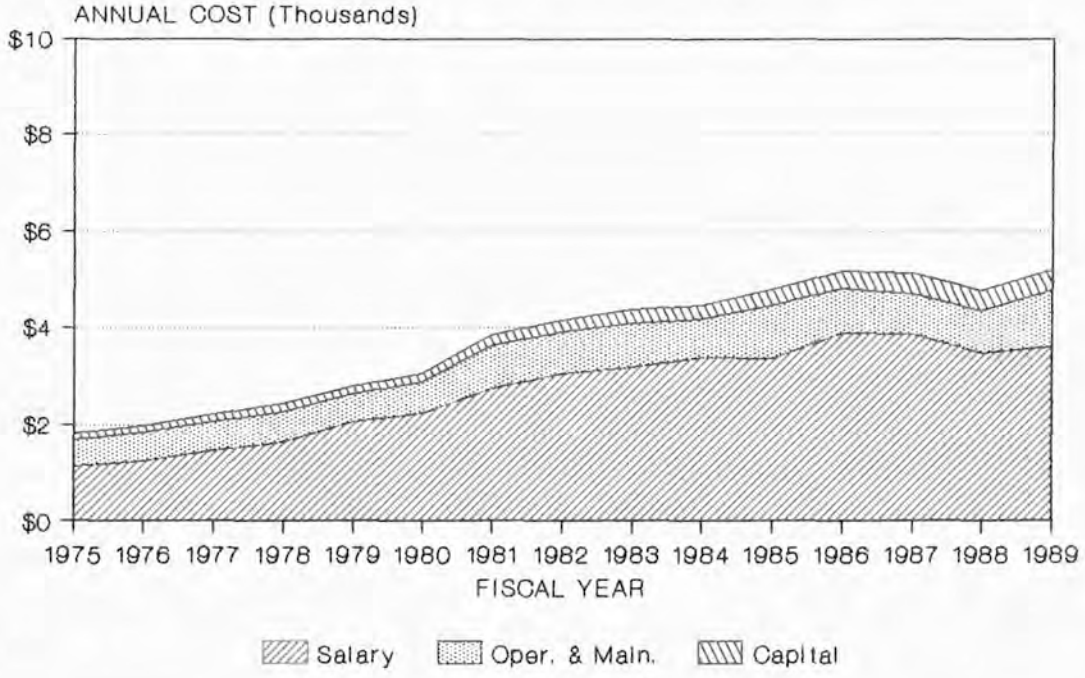


FIGURE 9:
INTERNATIONAL HYDROMETRIC STATION
AVERAGE ANNUAL OPERATING COSTS



APPENDIX A

DETAILED PROGRAM COSTS

DETAILED PROGRAM COSTS

A.1 INTRODUCTION

Appendix A 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, materiel 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.

A.2 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 1.25 was applied to the salary costs of international gauging stations, respectively, for the first four years of the Agreement (1975-1979) to account for the greater effort needed to operate these types of stations. These factors were revised to 1.10 and 1.40 for remote and international stations, respectively, based on an analysis of 1978-79 salary costs and were used until 1987-88.

TABLE A1
SASKATCHEWAN WATER QUANTITY PROGRAM
SALARY COST 1989-1990

	Position No.	Position Title	Salary
1.	840-1265 (x0.85)	Hydrometric Technologist	$ 30 752
2.	840-1279	Hydrometric Supervisor	$ 39 101
3.	840-1285	Hydrometric Supervisor	$ 39 101
4.	840-1370	Hydrometric Supervisor	$ 39 101
5.	840-1401	Hydrometric Technologist	$ 32 211
6.	840-1409	Hydrometric Technologist	$ 36 179
7.	840-1413	Hydrometric Technologist	$ 36 179
8.	840-1460	Hydrometric Supervisor	$ 39 101
9.	840-1505	Hydrometric Technologist	$ 36 179
10.	840-1506	Hydrometric Technologist	$ 36 179
11.	840-5619 (x0.10)	Data Control Supervisor	$ 2 227
12.	840-7552 (x0.05)	Studies & Systems Engineer	$ 2 335
13.	840-8012	Hydrometric Technologist	$ 36 179
14.	840-8013 (x0.05)	Construction Supervisor	$ 1 955
15.	840-8073	Hydrometric Technologist	$ 36 179
16.	840-8119	Hydrometric Technologist	$ 36 179
17.	840-8189 (x0.05)	Boundary Waters Engineer	$ 2 482
18.	840-8907	Hydrometric Technologist	$ 36 179
19.	840-8913	Hydrometric Technologist	$ 36 179
20.	840-8914	Hydrometric Technologist	$ 36 179
21.	840-8915	Hydrometric Technologist	$ 36 179
22.	840-8916	Hydrometric Technologist	$ 36 179
23.	840-8951	Hydrometric Supervisor	$ 39 101
24.	840-8952 (x0.05)	Computations Technologist	$ 1 533
25.	840-9403 (x0.25)	Hydrometric Assistant (term)	$ 6 895
26.	COSEP (x0.10)	Hydrometric Assistant	$ 1 315
27.	Overtime	All Positions	$ 25 746
28.	H&M Survey (less 0.75 p-ys)	All Positions	-$ 27 134
	TOTAL	(18.70 P-Ys)	$709 970

CALCULATION OF STATION UNIT SALARY COST

Station Units:	
Remote Access	$ 34.40
Normal Access	$157.70
International	$ 42.60
TOTAL	$234.70
Salary-weighted Station-Units:	
Remote Access	$ 34.40
Normal Access	$157.70
International x 1.25	$ 53.25
TOTAL	$245.35

$$\textit{Unit Salary Cost} = \frac{\textit{Total Salary Cost}}{\textit{Salary-weighted Station Units}} = \frac{\$709970}{245.35} = \$2894$$

Unit Salary Cost Normal =	$ 2 894
Unit Salary Cost Remote =	$ 2 894
Unit Salary Cost International = $2 894 x 1.25 =	$ 3 617

A factor of 1.25 has been used in this report for international gauging stations (1.0 for normal and remote stations) based on a 1988 review of salary costs. These factors will be used until 1992-93 unless revisions are justified during this five-year period.

A.3 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 1989-90 operating costs indicates that the operating cost for a remote hydrometric station in Saskatchewan was 3.5 times greater than a normal access station. This reflects high air charter costs and the generally greater cost of travelling in northern areas.

A.4 CAPITAL DEPRECIATION COSTS

Capital depreciation is charged for hydrometric survey and construction 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 annual rate of depreciation for survey equipment is 10 percent. The actual calculation of inventory value is based on the mean of the value at the beginning and end of the fiscal year. This procedure reflects purchasing activity throughout the year.

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

TABLE A2

SASKATCHEWAN WATER QUANTITY NETWORK
OPERATIONS COST SUMMARY 1989-1990

	COST CODE*			
	305	306	307	TOTAL
Travel	53 696	7 187	10 397	71 280
Transportation and Postage	37	1 332	666	2 035
Telephones	7 259	2 544	2 744	12 547
Advertising and Printing Services	545	9	111	665
Professional and Special Services	4 107	0	720	4 827
Temporary Help Services	728	0	0	728
Other Services	3 846	6 444	43	10 333
Rentals	3 497	145 698	98	149 293
Purchased Repairs (other than vehicles)	6 046	1 283	325	7 654
Public Utility Services	45 449	0	2 930	48 379
Purchased Materials (other than capital)	7 812	4 551	1 004	13 367
Parts and Consumable Tools (other than vehicles)	36 845	8 037	9 954	54 836
Other Expenditures	595	0	0	595
Sub-Total	170 462	177 085	28 992	376 539
Current Meter Maintenance	1 906	417	514	2 837
Minicomputer Costs**	45 810	10 021	12 339	68 170
Vehicle Operating Costs (Table 8)	27 635	722	7 720	36 077
Total Operating Costs	245 813	188 245	49 565	483 623
Station Units	157.70	34.40	42.60	234.70
Unit Operations Cost	1 559	5 472	1 163	2 061

* 305 - conventional
306 - remote
307 - international

** See Appendix B for details

TABLE A3

COST ACTIVITY SUMMARY

1989 - 1990

LINE OBJECT NAME	LO#	TOTAL	001	110	303	304	305	306	307	308	310	313	316	317
TRAVEL														
Travel Expenses	0401	112795	26694	359		118	53548	7187	10397	3147	9153	460		1731
Taxi - HQ area	0441	4	4											
Travel Training	0444	8201	6163										2038	
Travel Non-Public Service	0450	756	609				147							
Sub Total		121756	33470	359	0	118	53696	7187	10397	3147	9153	460	2038	1731
TRANSPORTAION AND POSTAGE														
Air	0601	2120	110		1124	37	289	333	12		178	37		
Other Postal	0652	3684	3441				77		49				117	
Courier	0653	1618	658	9	414		174	35	204	81		9		34
Central Freight	0654	2953	20		1725		793	298			116			
Sub Total		10374	4229	9	3264	37	1332	666	265	81	294	46	117	34
TELEPHONES														
Telephones (GTA)	0701	12804	12774						30					
Install & Repair (non-GTA)	0702	2246	366				1206	334	111			230		
Long Distance (non-GTA)	0703	5033	1397	7			1841	37	720		101	879	50	
Service Charge (Rental)	0704	23009	5026	105			3318	831	1751			11979		
Sales Tax Communications	0710	1076	351				280	42	131			273		
Message & Data (non-GTA)	0806	12731	21									12710		
Other Comm Servs	0810	22	19				3							
Radio Licenses	0822	1717					416	1301						
Sales Tax and Commun	0850	822					195					627		
Sub Total		59460	19953	111	0	0	7259	2544	2744	0	101	26698	50	0
ADVERTISING & PRINTING														
Advertising Creation N G	0901	337							1			1	335	
Advertising Placement N G	0902	314	118				187		8			1		
Publication Outside	1051	720											720	
Oth Printing Services DSS	1064	2217	1897						102		140		78	
Print Ser Outside Resl	1070	171					171							
Oth Print Service Outside	1073	4993	3096				12			1070			814	
Visual Servs Acq Outside	1083	79	79											
Audio Visual Servs N G	1086	36	36											
Photographic Ser Photos	1093	3867	3328			29	175	9			326			
Sub Total		12733	8555	0	0	29	545	9	111	1070	465	2	1946	0
PROFESSIONAL & SPECIAL SERVICE														
Surveys Consul	1111	2700											2700	
Engineer Ser Civil	1130	2247					2247							
Sci Cons	1160	5000				5000								
Lab Test Analys	1170	240					240							
Gauge Attendants	1171	3180				840	1620		720					

TABLE A3

COST ACTIVITY SUMMARY

1989 - 1990

LINE OBJECT NAME	LO#	TOTAL	001	110	303	304	305	306	307	308	310	313	316	317
Mngt Cons Exc DSS	1181	2500												2500
Res Contracts Env Issues	1182	2427			1427	1000								
Sub Total		18294	0	0	1427	6840	4107	0	720	0	0	0	2700	2500
TEMPORARY HELP SERVICE														
Contract Steno	1301	2488	2488											
Contract Clerical	1302	2009	2009											
Other Temporary Help	1303	728					728							
Sub Total		5225	4496	0	0	0	728	0	0	0	0	0	0	0
OTHER SERVICES														
Laundry Dry Cleaning	1501	714	660				43	10						
EDP Services DSS	1505	1830										580	1250	
EDP Purchases Software	1510	21798	18766						43				95	2893
Contract Admin. DSS	1525	16379	3130		90		3512	6434			996	2160	56	
Promotion Environment Week	1535	228	228											
Inter-Intra Off Mov	1540	48	48											
Brokerage Fees	1554	51					51							
Storage Warehouse	1560	1723	547									395		781
Garbage Collection	1566	343	340								3			
Hospitality Expenses	1570	151								151				
Regist Seminars Workshops	1573	1540	1540											
Snow & Ice Removal	1581	333	265				68							
Oth Ser Cntrct Not Spec	1586	2587					160				1990		437	
Petty Cash Purchase	1589	76	63				13							
Sub Total		47799	25587	0	90	0	3846	6444	43	151	2989	3135	1838	3674
RENTALS														
Land	1601	221					10	211						
Photo Printing Equipment	1621	1519	1519											
Photo & AV Equip	1624	625	220											405
Machine Equipment	1625	3338					65				3273			
Lease Motor Vehicle	1630	349					90						259	
Deliv & Const Vehicles	1631	408			258						150			
Aircraft External Supplies	1635	142969						142969						
Building Rental	1640	3272	1131			114		2028						
Gas Cylinders (Rental)	1650	3920					3332	490	98					
Rent Equip N E S	1651	808	561		129						119			
Sub Total		157429	3431	0	387	114	3497	145698	98	0	3541	0	259	405
PURCHASED REPAIR														
Con Elev Mat Hdlg Equip	1702	273	273											
Air Cndtng Refrig Equip	1711	1102	119									983		
Ele Light Distr Cent Equip	1713	609	189				120				300			
Mea Cont Lab Inst Excxray	1718	4160	620				2159	1076	305					

TABLE A3

COST ACTIVITY SUMMARY

1989 - 1990

LINE OBJECT NAME	LO#	TOTAL	001	110	303	304	305	306	307	308	310	313	316	317
Sa San Alrm Sign Syst	1719	849	349				500							
Fire Fight Equip	1720	527	13				515							
Ser Ind Equip Vend Mach	1721	1571	445				1000				126			
Other Equipment	1728	668					413				255			
Telecom Equipment	1734	752										752		
EDP Equipment	1735	31979										31979		
Off Mch Equip Exc Furn	1736	278	278											
Oth non-elec Office Equip	1737	140						140						
Ships Boats	1740	499					432	67						
Marine Equip	1741	450					450							
Road Motor Vehicles	1746	5090	4403				457		20		210			
Misc Veh	1747	81	81											
Oversnow Vehicles	1749	6	6											
Sub Total		49034	6776	0	0	0	6046	1283	325	0	891	33714	0	0
BUILDING & STRUCTURES REPAIR														
Gauge Stations	1805	250									250			
Power Transm Dist Line	1825	1880									1880			
Office Bldg	1845	889	889											
Sub Total		3019	889	0	0	0	0	0	0	0	2130	0	0	0
PUBLIC UTILITY SERVICES														
Electric Consumption	1901	48400	22				45449		2930					
PURCHASED MATERIALS														
Topsoil, Sand & Gravel	2006	2130									2130			
Diesel Fuel	2012	122	122											
Propane	2013	585	124				346	116						
Automotive Gas	2014	41703	41410				262				32			
Aviation Gas	2015	1554						1554						
Jet Fuel	2016	804						804						
Other Petro Products	2018	1941	1595				318	3			25			
Leather Furniture	2019	18	18											
Wood Fabric Materials	2020	6006	114		272		12				5609			
Paper, Paper Board	2021	1178	698				28					452		
Textile Fab Materials	2022	186	39								147			
Chem & Related Materials	2023	898	445				342				111			
Hydrogen Helium	2024	184					184							
Plastic Bag Sheet	2025	181											181	
Gunpowder Explos	2026	17					17							
Chlorin Oxyg Acetyl	2027	2052	33				1545	183	257		34			
Iron, Steel	2028	7521	76				400				7045			
Metal Fabricated Products	2030	6503	4044				748	376			1336			
Cement	2031	227					6				221			
De-icing Salt	2032	12	12											
Roofing Mat	2033	79									79			
Glass	2034	42									42			
Insulation	2035	546	56				11				478			

TABLE A3

COST ACTIVITY SUMMARY

1989 - 1990

LINE OBJECT NAME	LO#	TOTAL	001	110	303	304	305	306	307	308	310	313	316	317
Protective Clothing	2040	2092	958				683	199	252					
Footwear Apparel & Acc	2041	2157	1461				247	449						
Toiletries	2042	299	7		273		12	7						
Recreation Equip	2043	110					110							
House Furniture	2044	130	130											
Kitch Utens Cutl Tablew	2045	25	25											
Diesel Fuel Coast Guard	2046	1145	1145											
Stocked Items - DSS	2048	3088	2950				138							
Audio & Video Tapes	2049	89	89											
Library Stock	2051	1819	1092				271					396	60	
Maps, Charts, etc.	2052	699	372				211						117	
Station Off Supp	2054	8582	8381				193					8		
Drafting Supplies	2055	674	193						482					
Photoc Pap Chem	2058	1953	1953											
Data Processing Supplies	2059	3138	774				395					1969		
Photographic Goods	2060	186	126				43		5	12				
Med Pharmac Prod	2061	3					3							
Contain CLS Return	2063	515	100				101	313						
Paint	2068	1027	771				242				13			
Mis Prod Audi - Vis Blb	2070	1234	396				657	116			66			
Hardware	2071	1413	711				261	433	8					
Subscriptions	2082	246	211										35	
Purch P Cash Inc Tx	2083	295	270				25							
Sub Total		105410	70902	0	545	0	7812	4551	1004	12	17368	2825	393	0
PARTS & CONSUMABLE TOOLS														
Cnvey Elev Mat Handl Equi	2105	108	108											
Sp Ind Equip	2106	420									420			
Heat Air Cond Refrig Equip	2111	341	334				8							
Plumb Equip Fit	2113	405	25				28				352			
Elec Light Dist Cont Equip	2114	1812	81				70	347	244		977			93
Other Electrical Equipment	2116	2017	530				1003	300	6		177			
Batteries	2118	5519	1230				2784	1501			4			
Other Lab Supplies	2120	2823	68		2724		31							
Scientific Equipment	2121	3315					3315							
Mea Cont Med Opt Inst	2122	38646	131		489		37377	198			452			
Saf Sanit Equip	2124	1276	210				263	627				175		
Service Industry Equip	2125	2835	263				1444	423			704			
Hand Tools	2126	4030	2145				1843				42			
Other Equip Incl X-ray	2128	825	335				490							
EDP Equipment	2135	2482	326				19					2138		
Elec/Auto Off Syst Equip	2137	192	180									13		
Other Office Equipment	2138	112	100				12							
Software Packages	2139	4321	2618									1703		
Ships, Boats	2140	1775	42				1726	7						
Motors Vehicles	2146	4542	3027				600				915			
Tires & Tubes	2147	3347	3228						119					
Tractors Landscap Equi	2148	52					52							
Oversnow Vehicles	2149	280	280											
Sub Total		81475	15263	0	3213	0	51064	3403	369	0	4043	4028	0	93

TABLE A3

COST ACTIVITY SUMMARY

1989 - 1990

LINE OBJECT NAME	LO#	TOTAL	001	110	303	304	305	306	307	308	310	313	316	317
OTHER EXPENDITURES														
Damage Claims	2510	20585	20585											
Pay Customer Duty Tax	2524	595					595							
Vehicle Registration	2528	1397	1397											
Departmental Awards	2530	74	74											
Sub Total		22651	22056	0	0	0	595	0	0	0	0	0	0	0
SUB-TOTAL		753435	219856	490	12189	7175	187308	172451	19269	4542	41271	70953	9459	8472
EQUIPMENT REGISTRATION														
Ele Lght Distr Cont Equip	2316	2782					2782							
Oth Elec Equip Appl	2317	1260	1142									118		
Scientific Equipment	2321	18229					5744					12485		
Mea Cont Lab Inst Excxray	2322	1812					1812							
Srv Ind Equip Vend Mach	2332	5863	534				756	4572						
Furn Fixt Exc Dss	2333	2220	2220											
Fur Fixt Dss	2334	540	540											
Photo Audio-Vis Equip	2335	200	200											
Image Video & Comm Equi	2351	1073							1073					
Mess Data & Comp Comm	2354	649										649		
Other EDP Equipment	2357	43426	12966		1132		4695					24633		
Off Mch Equip $500+	2358	7500	7500											
EDP Equip Periferals	2359	3929	3929											
EDP Software	2361	3696										3696		
Rd Motor Vehicles	2371	80146	79136				1010							
Misc Veh Oth Rd Veh	2372	265	265											
EQUIPMENT ACQUISITION TOTAL		173589	108432	0	1132	0	16799	4572	1073	0	0	41580	0	0
GRAND TOTAL		927024	328289	490	13321	7175	204107	177023	20342	4542	41271	112534	9459	8472

TABLE A4

VEHICLE OPERATING COSTS 1989-1990*

Vehicle Type	Hydrometric Costs				Construction 310	Total Costs	Usage Vehicle-months	Average Cost/Month
	Normal 305	Remote 306	Int'l 307	Total Hydrometric				
Multi-purpose	$19 394	$507	$5 418	$25 319	$ 4 470	$29 789	179	$166.41
Light Truck	$ 8 241	$215	$2 302	$10 758	-	$10 758	73	$147.37
Med. Truck	-	-	-	-	$ 4 050	$ 4 050	12	$337.50
Heavy Truck	-	-	-	-	$ 4 358	$ 4 358	12	$363.17
TOTAL	$27 635	$722	$7 720	$36 077	$12 878	$48 955	276	-

* Data extracted from F.M.I.S. Cost Summary Report dated 90-07-01

** Hydrometric costs for 1989-90 are prorated on basis of the 1988-89 Annual Report

TABLE A5

SASKATCHEWAN WATER QUANTITY PROGRAM
CAPITAL DEPRECIATION COSTS 1989-1990

1.	VEHICLE DEPRECIATION (Table A6)			$57 692
2.	EQUIPMENT DEPRECIATION*			
	- Field Equipment	$105 300		
	- Marine Equipment	$ 25 700		
	- Scientific Equipment	$100 120		
	- Transporation Equipment	$ 25 100		
	- Shop & Construction Equipment	$ 74 700		
	- Accountable Items	$ 79 200		
	Total Inventory Value March 31, 1990	$410 120		
	Total Inventory Value March 31, 1989	$400 480		
	Average Inventory Value for 1989-90	$405 300		
	Capital Depreciation of Equipment @ 10%	$405 300 x 10%	=	$40 530
3.	TOTAL CAPITAL DEPRECIATION			$98 222
4.	UNIT CAPITAL DEPRECIATION			
	Total Capital Depreciation/Total Station Units = $98 222/234.70		=	$ 419

* Departmental Equipment-In-Use Material Management System

TABLE A6

VEHICLE DEPRECIATION
1989-1990

Multi-Purpose Vehicles and Trucks - Lifetime 72 Months

VEHICLE NUMBER	ORIGINAL CAPITAL COST $	DEPR PER MONTH $	TIME IN USE	ANNUAL DEPR $	REMARKS
83-002	8 059	112	3	336	CADC* July '89
83-149	14 395	200	4	800	
83-151	12 660	176	3	528	CADC July '89
84-125	12 755	177	0	-	CADC July '89
84-126	21 549	299	12	3 588	Construction
85-087	13 506	188	12	2 256	
85-088	13 506	188	0	-	CADC July '89
85-089	8 478	118	12	1 416	
85-090	13 506	188	12	2 256	
85-091	11 140	155	12	1 860	
86-046	16 174	225	12	2 700	
86-047	15 400	214	12	2 568	Construction
86-048	15 400	214	12	2 568	
86-049	13 046	181	12	2 172	
86-050	11 641	162	12	1 944	
86-051	14 611	203	12	2 436	
87-085	16 691	232	12	2 784	
87-086	16 691	232	12	2 784	
87-087	18 449	256	12	3 072	Construction
87-088	16 691	232	12	2 784	
87-089	16 691	232	12	2 784	
88-045	14 224	198	12	2 376	
88-046	18 673	259	12	3 108	
88-047	18 673	259	12	3 108	
89-171	21 125	293	7	2 051	
89-172	21 125	293	5	1 465	
89-173	21 126	293	6	1 758	
89-174	15 760	219	10	2 190	

Actual replacement cost of Saskatchewan vehicles in 1989-90 = $79 136

Vehicle depreciation = $57 692

* Crown Assets Disposal Corporation

APPENDIX B

WRB MINI-COMPUTER COST SHARING

B.1 COST SHARING PROCEDURE

Determination of the 1989-90 shareable computer costs has been complicated by the installation of the WRB minicomputer and by the need for the continued use of Westbridge Computer Corporation (formally SaskComp) for a small portion of the hydrometric data computations. The calculations for the shareable computer costs are shown in Section 5.2.

The cost-sharing formula includes imputed rental, necessary to amortize the capital expenditure for the minicomputer system, the annual operating cost (AOC) and the annual maintenance cost (AMC). The initial capital expenditure (ICE) is amortized over a period of 10 years by multiplying by 0.10. Because the expected residual value of the minicomputer system at the end of this period is assumed to be zero, capital purchases made between year 1 and year 10 are amortized for shorter periods. For instance, a purchase made in year 2 would be amortized for 9 years. This procedure for determining the annual (shareable) computing costs is to be used until such time that the present minicomputer system is replaced. The formula can be expressed as Total (Shareable) Annual Computing Cost (TACC)

$$TACC = AOC + AMC + \frac{ICE}{10} + \left(\frac{New\ Capital}{11 - (Year\ 2\ to\ Year\ 10)}\right)$$

However, since the decision of using an in-house minicomputer system was not a joint federal-provincial one, a ceiling for the total (shareable) annual computing cost was adopted. The ceiling is determined using the previous year's total (shareable) computing costs multiplied by a

national cost increase factor (i.e. Government Price Index). The actual cost to be shared is the lesser of the two; that calculated using the formula or that determined using the previous year's total (shareable) computing cost times the Government Price Index.

The items considered to be shareable may be classified as either part of the capital expenditure, annual operating costs or annual maintenance costs and are itemized as follows:

i) Capital Expenditure (ICE and New Capital):

- The imputed rental will be calculated using the capital cost of the minicomputer system determined on April 1st of the fiscal year. The items to be included when determining the imputed rental are the digitizing system, terminals, plotters, microcomputers, modems, printers, and other hardware items which may be added from time to time.
- The purchase cost of additional equipment will only be added when the equipment is used in the data computational process.
- When the capital cost is adjusted to include additions, due to the purchase of new equipment, the capital cost will be reduced by the amount of the imputed rental recovered since the last upgrade.

ii) Annual Operating Costs (AOC):

- The annual operating cost will include any annual charge for rental and/or licence charges for software, communications costs between the minicomputer and host computer, communications costs between sub-offices and the minicomputer

for the compilation of annual data as well as host computer costs and miscellaneous supplies.

iii) Annual Maintenance Costs (AMC):

- The annual maintenance costs will include the charge for the maintenance of the complete minicomputer system.

B.2 MINI COMPUTER - MAINFRAME COSTS: 1989-90

A.	Mainframe		
	1. Westbridge (includes RJE port)		$ 2 573.22
B.	Service Charges		
	1. Electronic Environments (Refrigeration installations) power and air conditioner		$ 1 336.55
	2. Alsask Fire Security 2 inspections at $175/inspection		$ 350.00
	3. Digital		
	PDP 11/44 maintenance	$15 612.00	
	MicroVax II - Prince Albert (maint.)	$ 5 288.40	
	Install memory board on PA Vax	$ 300.00	
	Install PSI on Prince Albert Vax	$ 2 268.00	
		$25 468.40	$25 468.40
	4. Crown Store-All storage and delivery of backup computer disks and tapes		$ 960.00
	5. Gentian digitizer maintenance (Prince Albert and Regina)		$ nil
	6. Calcomp		
	1012 plotter maintenance	$ 264.00	
	plotter pen holders	$ 87.36	
		$ 351.36	$ 351.36
	7. Dataforce (SaskTel)		
	C.ITOH 600 printer maintenance	$ 804.00	
	LA120 printer maintenance - Prince Albert	$ 483.00	
	LA120 printer maintenance - Shaunavon	$ 579.00	
		$ 1 866.00	$ 1 866.00
	8. Lanpar terminal repairs		$ 347.50

9. SaskTel

Datapac rental (Regina and P.A.)	$ 5 828.00	
Datapac charges	$ 4 582.41	
Rental of conditioned lines (3 Regina, 2 Prince Albert and 1 Shaunavon)	$ 2 913.00	
Rental of RJE line	$ 3 123.60	
Long distance charges	$ 945.30	
Federal communications tax	$ 466.86	
	$17 859.17	$17 859.17

C. Supplies

computer paper	$ 1 539.52	
RA60 disk packs (2)	$ 2 405.20	
TK50 cartridges (10)	$ 428.00	
plotter paper	$ nil	
cabling, racks, plugs	$ 750.88	
LaserJet font cartridge	$ 310.00	
ribbons	$ 94.90	
	$ 5 528.50	$ 5 528.50

D. Capital and licences

Capital items were purchased during the 1989-90 fiscal year and will be included in the 1990-91 cost-sharing calculations for the value of the mini-computer system.

Right-to-copy VMS version 4.3 to 4.6 (PA Vax)	$ 428.00	
Epson LQ-1050 printer (PA)	$ 1 123.00	
HP LaserJet Series II printer	$ 2 898.00	
Ogivar PC - Data Control	$ 4 695.00	
Ogivar PC - Prince Albert	$ 4 695.00	
Lanpar terminals (3)	$ 1 300.00	
	$15 139.00	$15 139.00

B.3 CALCULATION OF TOTAL ANNUAL COMPUTING COST

The Total (Shareable) Annual Computing Cost equals the imputed rental charges plus the annual operating cost plus maintainance costs.

The imputed rental charge is the capital value of system on April 1, 1989 amortized for 7 years.

The total shareable cost cannot exceed the 1983-84 shareable cost multiplied by the annual Government price indicies for each year since 1983-84. For the period 1983-84 to 1989-90 the total inflation index = 1.244.

a) Imputed Rental Charge

$$\frac{\text{Initial Capital}}{10}_{\text{Year 1}} + \frac{\text{New Capital}}{9}_{\text{Year 2}} + \frac{\text{New Capital}}{8}_{\text{Year 3}} + \ldots$$

Initial capital = $182,800
Imputed rental - year 1 = $ 18,280

New capital (year 2) = $ 29,624
Imputed rental - year 2 = $ 18,280 + ($29,624 x 1/9)
= $ 21,572

New capital (year 3) = $ 68,168
Imputed rental - year 3 = $ 21,572 + ($68,168 x 1/8)
= $ 30,093

New capital (year 4) = $ 3,575
Imputed rental - year 4 = $ 30,093 + ($3,575 x 1/7)
= $ 30,604

New capital (year 5) = $ 21,660
Imputed rental - year 5 = $ 30,604 + ($21,660 x 1/6)
= $ 34,214

New capital (year 6) = $ 10,753
Imputed rental - year 6 = $ 34,214 + ($10,753 x 1/5)
= $ 36,365

b) Annual Operating Cost (AOC)

- Host computer (SaskComp) Shareable Cost	$ 2,573.22	
- storage of backup disks		$ 960.00
- telecommunication charges and rentals	$17,859.17	
- supplies - paper, ribbons, etc.		$ 5,528.50
		$26,920.89

c) Annual Maintenance Cost (AMC)

- PDP 11/44 computer		$15,612.00
- MicroVax II (Prince Albert)		$ 5,288.40
- fire protection, power, air conditioners	$ 1,686.55	
- plotter		$ 351.36
- digitizer		$ -
- CITOH printer		$ 804.00
- terminal repairs		$ 347.50
- LA120 printers (Prince Albert & Shaunavon)	$ 1,062.00	
		$25,151.31

d) Total Shareable Computing Costs (TACC)

= a) + b) + c)
= $36,365.00 + 26,920.89 + $25,151.31
= $88,437.20

B.4 CALCULATION OF TOTAL (SHAREABLE) ANNUAL COMPUTING COST CEILING

1989-90 Inflation Index = 1.038
(based on Government Price Index)

Also

1983-84 to 1989-90 Inflation using Government Price Index

$$= \frac{2.75\ (\text{1989-90 GPI}) - 2.21\ (\text{1983-84 GPI})}{2.21}$$

$$= 24.4\%$$

1983-84 costs = $54,802

Ceiling = $54,802 x 1.244
= $68,170

Computing costs for 1989-90 = $88,437.20

Therefore Shareable Computing Cost = Ceiling
= $68,170

APPENDIX C

STATION AND COST SUMMARY DATA

FOR INCLUSION IN

NATIONAL ANNUAL REPORT

Province/Territory: Saskatchewan

TABLE 1
WATER QUANTITY SURVEYS
GAUGING STATION DATA FOR 1989-1990

No. of Stations			Changes during 1989-90		Stn. Designation April 1, 1989			
April 1 88	April 1 89	Change	Added	Discontinued	Fed.	F P	Prov.	Contrib.
356	364	+8	8	0	* (1) 145	* 125	* 93	1

* Bracket Sediment Stations

TABLE 2
WATER QUANTITY SURVEYS
COMPARATIVE GAUGING STATION DATA April 1/75 to April 1, 1989

Federal Stations			F P Stations			Provincial Stations			Total Stations		
Apr 1 75	Apr 1 89	Chge	Apr 1 75	Apr 1 89	Chge	Apr 1 75	Apr 1 89	Chge	Apr 1 75	Apr 1 89	Chge
173	145	-28	106	125	+19	51	93	+42	330	364	+33

TABLE 3
WATER QUANTITY SURVEYS
DETAILED GAUGING STATION DATA 1989-90

F-1	F-2	F-3	F-4	Total F	FP-1	FP-2	FP-3	Total F/P	P-1	P-2	Total P	Contributed	Total-All
15	43	66	(1) 21	145	0	22	103	125	79	14	93	1	364

Bracket Sediment Stations in all catagories.

Province: SASKATCHEWAN

TABLE 4
WATER QUANTITY SURVEYS
TOTAL PROGRAM COSTS & SHAREABLE COSTS FOR 1989-1990
(× $1000)

Total Program Costs					Shareable Costs						
P/Yrs	Sal.	Oper.	Cap.	Total	P/Yrs	Sal.	Oper.	Const.	Total	F Share	P Share
34.30	1 437.0	763.7	173.6	2 374.3	18.7	710.0	581.8*	98.7	1 390.6	902.4	488.2

*Consists of operations costs (Table 6) and capital depreciation costs (Table 9)

TABLE 5
WATER QUANTITY SURVEYS
SUMMARY OF SCHEDULES D/F - 1989-1990

Streamflow & Water Level		Sediment		Total
Operation	Construction	Operation	Construction	
456 000	37 000	1 000.00	0	494 000

TABLE 6
WATER QUANTITY SURVEYS
COMPARISON - SCHEDULED & ACTUAL COSTS FOR 1989-1990
(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		
455 995	463 940	37 000	24 239	493 995	488 179	+5 816	532 985	44 806**

**Deficit for 1988-89 = $30 882 and credit for DCPs = $12 485 therefore, net Saskatchewan surplus for 1989-90 = $44 806 - $30 882 - $12 485 = $1 439

APPENDIX D

MEMORANDUM OF AGREEMENT

MEMORANDUM OF AGREEMENT

D.1 MEMORANDUM OF AGREEMENT

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 coordinated 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 or 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 will 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 Sauve, 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 Sauve,)
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)

D.2 SCHEDULE A: APRIL 1, 1989

Schedule A of the Memorandum of Agreement identifies the operational and financial responsibility for hydrometric stations that comprise the water quantity network and are active on April 1 of each year. The Schedule also shows the type of data collected (flow, water level, sediment) and the period of operation (seasonal or annual). Decisions regarding changes to the Schedule are made by the Co-ordinating Committee with reference to the national designation guidelines for station classification. The Saskatchewan hydrometric network existing as of April 1, 1989 is documented in this section.

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
F1 - FEDERAL DEPARTMENTAL 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.	06CA008	CREAN LAKE AT THE WARDEN STATION	WSC	8L			PRINCE ALBERT
3.	05HA070	DOWNIE LAKE INFLOW CANAL	WSC	8Q			REGINA
4.	05HA064	DOWNIE LAKE RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
5.	05JF008	FAHLMAN CREEK NEAR DAVIN	WSC	8Q			REGINA
6.	05HA069	GAP CREEK BELOW DOWNIE LAKE DIVERSION	WSC	8Q			REGINA
7.	05HA074	HARRIS RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
8.	05HA063	JUNCTION RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
9.	06CA007	KINGSMERE LAKE AT THE OUTLET STRUCTURE	WSC	8L			PRINCE ALBERT
10.	07MC003	LAKE ATHABASCA NEAR CRACKINGSTONE POINT	WSC	12L		REMOTE	PRINCE ALBERT
11.	05HA076	MAPLE CREEK BELOW JUNCTION RESERVOIR	WSC	8Q			REGINA
12.	05JC004	RUSHLAKE CREEK ABOVE HIGHFIELD RESERVOIR	WSC	8Q			REGINA
13.	05GG007	SPRUCE RIVER BELOW ANGLIN LAKE RESERVOIR	WSC	12Q			PRINCE ALBERT
14.	05GG006	SPRUCE RIVER DIVERSION TO EMMA LAKE	WSC	8Q			PRINCE ALBERT
15.	06CA002	WASKESIU LAKE AT WASKESIU LAKE	WSC	8L			PRINCE ALBERT

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1989-90
F1 - FEDERAL DEPARTMENTAL PROGRAMS
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	6	0.25	1.50
	12L	1	0.40	0.40
	8Q	6	0.75	4.50
	12Q	1	1.00	1.00
TOTAL		14		7.40
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		15		7.80

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
F2 - INTERPROVINCIAL WATERS

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 MAIN 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	X		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.	05EF001	NORTH SASKATCHEWAN RIVER NEAR DEER CREEK	WSC	12Q			PRINCE ALBERT
24.	05NE003	PIPESTONE CREEK ABOVE MOOSOMIN LAKE	WSC	8Q			REGINA
25.	05JG004	QU'APPELLE RIVER ABOVE BUFFALO POUND LAKE	WSC	12Q			REGINA

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
F2 - INTERPROVINCIAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
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	X		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	X		REGINA
33.	05LC001	RED DEER RIVER NEAR ERWOOD	WSC	12Q	X		PRINCE ALBERT
34.	05HD033	REID LAKE NEAR DUNCAIRN	WSC	12L			REGINA
35.	06DD002	REINDEER RIVER ABOVE DEVIL RAPIDS	WSC	12Q		REMOTE	PRINCE ALBERT
36.	05JG013	RIDGE CREEK NEAR BRIDGEFORD	WSC	8Q			REGINA
37.	05JM007	ROUND LAKE NEAR WHITEWOOD	WSC	12L			REGINA
38.	05KD003	SASKATCHEWAN RIVER BELOW TOBIN LAKE	WSC	12Q			PRINCE ALBERT
39.	05JH007	SILTON INDEX RESERVOIR	WSC	8L			REGINA
40.	05JM019	STOCKHOLM INDEX RESERVOIR	WSC	8L			REGINA
41.	05HD034	SWIFT CURRENT CANAL AT SWIFT CURRENT	WSC	8Q			REGINA
42.	05KD004	TOBIN LAKE AT THE SPILLWAY	WSC	12L			PRINCE ALBERT
43.	05JF005	WASCANA CREEK NEAR LUMSDEN	WSC	12Q			REGINA

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1989-90
F2 - INTERPROVINCIAL WATERS
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	9	0.40	3.60
	8Q	11	0.75	8.25
	12Q	16	1.00	16.00
TOTAL		41		29.10
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		31.10

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
F3 - INTERNATIONAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	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.	11AC073	DENNIEL CREEK EAST TRIBUTARY NEAR VAL MARIE	WSC	8Q			REGINA
20.	11AC025	DENNIEL CREEK NEAR VAL MARIE	WSC	8Q			REGINA
21.	11AE003	EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY	WSC	12Q			REGINA
22.	11AC052	EASTEND CANAL	WSC	8Q			REGINA
23.	11AC055	EASTEND RESERVOIR	WSC	8L			REGINA
24.	11AC023	FRENCHMAN RIVER AT 50-MILE	WSC	8Q			REGINA
25.	11AC041	FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY	WSC	8Q		X	REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
F3 - INTERNATIONAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	RECORD OBTAINED ACCESS	OPERATIONS CENTER
26.	11AC001	FRENCHMAN RIVER BELOW EASTEND RESERVOIR	WSC	8Q			REGINA
27.	11AC062	FRENCHMAN RIVER BELOW NEWTON LAKE	WSC	8Q			REGINA
28.	11AC051	FRENCHMAN RIVER BELOW VAL MARIE	WSC	8Q			REGINA
29.	05ND006	FROBISHER INDEX RESERVOIR	WSC	8L			REGINA
30.	11AB102	GAFF DITCH NEAR MERRYFLAT	WSC	8Q			REGINA
31.	11AC063	HUFF LAKE	WSC	8L			REGINA
32.	11AC065	HUFF LAKE GRAVITY CANAL	WSC	8Q			REGINA
33.	11AC066	HUFF LAKE PUMPING CANAL	WSC	8Q			REGINA
34.	05NA006	LARSEN RESERVOIR NEAR RADVILLE	WSC	8L			REGINA
35.	11AB083	LODGE CREEK BELOW MCRAE CREEK AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
36.	05NA003	LONG CREEK AT WESTERN CROSSING OF INTERNATIONAL BOUNDARY	WSC	12Q			REGINA
37.	05NB001	LONG CREEK NEAR ESTEVAN	WSC	12Q			REGINA
38.	05NB027	LONG CREEK NEAR NOONAN	WSC	12Q			REGINA
39.	11AB075	LYONS CREEK AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
40.	11AB044	MCKINNON DITCH NEAR CONSUL	WSC	8Q			REGINA
41.	11AB008	MIDDLE CREEK ABOVE LODGE CREEK	WSC	8Q			REGINA
42.	11AB001	MIDDLE CREEK BELOW MIDDLE CREEK RESERVOIR	WSC	8Q			REGINA
43.	11AB108	MIDDLE CREEK NEAR GOVENLOCK	WSC	8Q			REGINA
44.	11AB080	MIDDLE CREEK RESERVOIR	WSC	8L			REGINA
45.	11AB114	MIDDLE CREEK RESERVOIR BEDFORD OUTLET	WSC	8Q			REGINA
46.	11AB115	MIDDLE CREEK RESERVOIR FLOOD SPILLWAY	WSC	8Q			REGINA
47.	05NC002	MOOSE MOUNTAIN LAKE (RESERVOIR) NEAR CORNING	WSC	12L			REGINA
48.	11AB018	NASHLYN CANAL NEAR CONSUL	WSC	8Q			REGINA
49.	11AC056	NEWTON LAKE	WSC	8L			REGINA
50.	11AC054	NEWTON LAKE MAIN CANAL	WSC	8Q			REGINA

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
F3 - INTERNATIONAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
51.	05NB020	NICKLE LAKE NEAR WEYBURN	WSC	12L			REGINA
52.	11AE008	POPLAR RIVER AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
53.	05NA009	RADVILLE INDEX RESERVOIR	WSC	8L			REGINA
54.	11AB058	RICHARDSON DITCH NEAR CONSUL	WSC	8Q			REGINA
55.	05NB016	ROUGHBARK RESERVOIR NEAR WEYBURN	WSC	8L			REGINA
56.	11AB020	SHEPHERD DITCH NEAR CONSUL	WSC	8Q			REGINA
57.	05NB021	SHORT CREEK NEAR ROCHE PERCEE	WSC	12Q			REGINA
58.	05ND001	SOURIS RIVER NEAR GLEN EWEN	WSC	12Q	X		REGINA
59.	05ND007	SOURIS RIVER NEAR SHERWOOD	WSC	12Q			REGINA
60.	11AB060	SPANGLER DITCH NEAR GOVENLOCK	WSC	8Q			REGINA
61.	11AB103	SQUAW COULEE NEAR WILLOW CREEK	WSC	8Q			REGINA
62.	05NB018	TATAGWA LAKE DRAIN NEAR WEYBURN	WSC	8Q			REGINA
63.	11AC068	VAL MARIE PUMP NO. 1	WSC	8Q			REGINA
64.	11AB084	VIDORA DITCH NEAR CONSUL	WSC	8Q			REGINA
65.	05NB024	WEYBURN INDEX RESERVOIR	WSC	8L			REGINA
66.	05NB011	YELLOW GRASS DITCH NEAR YELLOW GRASS	WSC	8Q			REGINA

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1989-90
F3 - INTERNATIONAL WATERS
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	39	0.75	29.25
	12Q	8	1.00	8.00
TOTAL		66		42.60
GRAND TOTAL		66		42.60

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
F4 - NATIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	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 BELOW 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.	05GG001	NORTH SASKATCHEWAN RIVER AT PRINCE ALBERT	WSC	12Q	X		PRINCE ALBERT
17.	05KJ014	PASQUIA RIVER AT HIGHWAY NO. 9	WSC	8Q			PRINCE ALBERT
18.	07LC003	PORCUPINE RIVER AT OUTLET OF GROVE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
19.	05HH001	SOUTH SASKATCHEWAN RIVER AT ST. LOUIS	WSC	12Q			PRINCE ALBERT
20.	05HD036	SWIFT CURRENT CREEK BELOW ROCK CREEK	WSC	12Q			REGINA
21.	06DA001	WOLLASTON LAKE AT ROSS CHANNEL	WSC	12L		REMOTE	PRINCE ALBERT

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1989-90
F4 - NATIONAL WATER QUANTITY 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	6	1.00	6.00
TOTAL		8		7.15
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		21		18.95

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1989-90
FP1 - FEDERAL-PROVINCIAL AGREEMENTS
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	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		0		0.00

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
FP2 - RIVER BASIN MANAGEMENT

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05KG003	AMISK LAKE NEAR FLIN FLON	WSC	12L			PRINCE ALBERT
2.	05JE005	AVONLEA CREEK NEAR ROULEAU	WSC	8Q			REGINA
3.	05KH002	CUMBERLAND LAKE NEAR CUMBERLAND HOUSE	WSC	12L			PRINCE ALBERT
4.	05JG015	KNOX COULEE NEAR TUXFORD	WSC	8Q			REGINA
5.	06CB001	LAC LA RONGE AT LA RONGE	WSC	12L			PRINCE ALBERT
6.	06CA006	MONTREAL LAKE NEAR WEYAKWIN	WSC	12L			PRINCE ALBERT
7.	06CA003	MONTREAL RIVER AT HIGHWAY NO. 2	WSC	12Q			PRINCE ALBERT
8.	05JE004	MOOSE JAW RIVER NEAR ROULEAU	WSC	8Q			REGINA
9.	05NC001	MOOSE MOUNTAIN CREEK BELOW MOOSE MOUNTAIN LAKE	WSC	8Q			REGINA
10.	05NE002	MOOSOMIN LAKE NEAR MOOSOMIN	WSC	8L			REGINA
11.	05JB001	NOTUKEU CREEK NEAR VANGUARD	WSC	8Q			REGINA
12.	05NE001	PIPESTONE CREEK NEAR MOOSOMIN	WSC	8Q			REGINA
13.	05KH009	SASKATCHEWAN RIVER OLD CHANNEL	WSC	12Q			PRINCE ALBERT
14.	05NB009	SOURIS RIVER NEAR ROCHE PERCEE	WSC	8Q			REGINA
15.	05HG001	SOUTH SASKATCHEWAN RIVER AT SASKATOON	WSC	12Q			PRINCE ALBERT
16.	05KG007	STURGEON-WEIR RIVER AT LEAF RAPIDS	WSC	12Q			PRINCE ALBERT
17.	05HD041	SWIFT CURRENT CREEK BELOW REID LAKE	WSC	12Q			REGINA
18.	07QC002	TAZIN LAKE NEAR OUTLET	WSC	12L		REMOTE	PRINCE ALBERT
19.	05MB009	THEODORE RESERVOIR NEAR THEODORE	WSC	8L			REGINA
20.	05JF012	WASCANA CREEK BELOW KRONAU MARSH	WSC	8Q			REGINA
21.	05JF015	WASCANA LAKE AT MARINA	WSC	12L			REGINA
22.	05MB008	WHITESAND RIVER NEAR SPRINGSIDE	WSC	8Q			REGINA

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1989-90
FP2 - RIVER BASIN MANAGEMENT
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	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	9	0.75	6.75
	12Q	5	1.00	5.00
TOTAL		21		14.25
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		22		14.65

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
1.	06AD011	ALCOTT CREEK ABOVE MEADOW LAKE	WSC	8Q			PRINCE ALBERT
2.	05HC005	ANTELOPE CREEK NEAR CABRI	WSC	8Q			REGINA
3.	05NF010	ANTLER RIVER NEAR WAUCHOPE	WSC	8Q	X		REGINA
4.	05JH001	ARM RIVER NEAR BETHUNE	WSC	8Q			REGINA
5.	05MC001	ASSINIBOINE RIVER AT STURGIS	WSC	8Q			REGINA
6.	05KF001	BALLANTYNE RIVER ABOVE BALLANTYNE BAY	WSC	12Q			PRINCE ALBERT
7.	05FF001	BATTLE RIVER AT BATTLEFORD	WSC	8Q	X		PRINCE ALBERT
8.	05HA003	BEAR CREEK NEAR PIAPOT	WSC	8Q			REGINA
9.	06AG001	BEAVER RIVER BELOW WATERHEN RIVER	WSC	12Q			PRINCE ALBERT
10.	06AD001	BEAVER RIVER NEAR DORINTOSH	WSC	12Q	X		PRINCE ALBERT
11.	05EF005	BIG GULLY CREEK NEAR MAIDSTONE	WSC	8Q	X		PRINCE ALBERT
12.	05MA011	BIRCH CREEK NEAR ELFROS	WSC	8Q			PRINCE ALBERT
13.	05EG006	BIRLING CREEK NEAR PAYNTON	WSC	8Q			PRINCE ALBERT
14.	05HA015	BRIDGE CREEK AT GULL LAKE	WSC	8Q			REGINA
15.	05HG002	BRIGHTWATER CREEK NEAR KENASTON	WSC	8Q			REGINA
16.	05KB005	BURNTOUT BROOK NEAR ARBORFIELD	WSC	8Q	X		PRINCE ALBERT
17.	06BB005	CANOE RIVER NEAR BEAUVAL	WSC	12Q		REMOTE	PRINCE ALBERT
18.	05KB003	CARROT RIVER NEAR ARMLEY	WSC	8Q	X		PRINCE ALBERT
19.	06BA001	CHURCHILL LAKE AT BUFFALO NARROWS	WSC	12L		REMOTE	PRINCE ALBERT
20.	05JF011	COTTONWOOD CREEK NEAR LUMSDEN	WSC	8Q	X		REGINA
21.	05HF014	CREIGHTON TRIBUTARY NEAR TOTNES	WSC	8Q			REGINA
22.	05HH002	CROMARTY CREEK NEAR BIRCH HILLS	WSC	8Q			PRINCE ALBERT
23.	05MB006	CROOKED HILL CREEK NEAR CANORA	WSC	8Q			REGINA
24.	05EG004	CRYSTAL CREEK NEAR IFFLEY	WSC	8Q			PRINCE ALBERT
25.	05JM015	CUTARM CREEK NEAR SPY HILL	WSC	8Q			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
26.	07CD007	DESCHARME RIVER BELOW DUPRE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
27.	06AG002	DORE RIVER NEAR THE MOUTH	WSC	12Q		REMOTE	PRINCE ALBERT
28.	07MA003	DOUGLAS RIVER NEAR CLUFF LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
29.	05GC006	EAGLE CREEK NEAR ENVIRON	WSC	8Q	X		PRINCE ALBERT
30.	05LB002	ETOMAMI RIVER NEAR BERTWELL	WSC	8Q	X		PRINCE ALBERT
31.	05GA007	EYEHILL CREEK NEAR MACKLIN	WSC	8Q			PRINCE ALBERT
32.	05LB007	FIR RIVER NEAR HUDSON BAY	WSC	12Q			PRINCE ALBERT
33.	06CE001	FOSTER RIVER ABOVE CHURCHILL RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
34.	05NF013	GAINSBOROUGH CREEK NEAR STORTHOAKS	WSC	8Q			REGINA
35.	05GG010	GARDEN RIVER NEAR HENRIBOURG	WSC	8Q			PRINCE ALBERT
36.	05NA005	GIBSON CREEK NEAR RADVILLE	WSC	8Q			REGINA
37.	05KA009	GOOSEHUNTING CREEK NEAR BEATTY	WSC	8Q			PRINCE ALBERT
38.	11AE010	HAY MEADOW CREEK NEAR LISIEUX	WSC	8Q			REGINA
39.	05MA012	IRONSPRING CREEK NEAR WATSON	WSC	8Q			PRINCE ALBERT
40.	05JG014	ISKWAO CREEK NEAR CRAIK	WSC	8Q			REGINA
41.	05NB014	JEWEL CREEK NEAR GOODWATER	WSC	8Q			REGINA
42.	05JK004	JUMPING DEER CREEK NEAR LIPTON	WSC	8Q			REGINA
43.	06BB004	KEELEY RIVER AT OUTLET OF KEELEY LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
44.	05HH003	KOHLESCHMIDT CREEK NEAR ROSTHERN	WSC	8Q			PRINCE ALBERT
45.	05JD004	LAKE OF THE RIVERS WEST INFLOW	WSC	8Q			REGINA
46.	05JJ003	LANIGAN CREEK ABOVE BOULDER LAKE	WSC	8Q			REGINA
47.	05KB006	LEATHER RIVER NEAR STAR CITY	WSC	8Q			PRINCE ALBERT
48.	05JH005	LEWIS CREEK NEAR IMPERIAL	WSC	8Q			REGINA
49.	05NF006	LIGHTNING CREEK NEAR CARNDUFF	WSC	8Q			REGINA
50.	05MC003	LILIAN RIVER NEAR LADY LAKE	WSC	8Q			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
51.	05LB004	LOISELLE CREEK NEAR HUDSON BAY	WSC	8Q			PRINCE ALBERT
52.	05NA004	LONG CREEK NEAR MAXIM	WSC	8Q			REGINA
53.	05HF005	MACDONALD CREEK NEAR BOUNTY	WSC	8Q			REGINA
54.	05MA021	MAGNUSSON CREEK NEAR WYNYARD	WSC	8Q			PRINCE ALBERT
55.	06AD007	MAKWA RIVER AT RAPID VIEW	WSC	8Q			PRINCE ALBERT
56.	05LE011	MALONECK CREEK NEAR PELLY	WSC	8Q			REGINA
57.	05JA003	MCDONALD CREEK NEAR MCCORD	WSC	8Q	X		REGINA
58.	05HF015	MCDONALD TRIBUTARY NEAR TOTNES	WSC	8Q			REGINA
59.	05EF004	MONNERY RIVER NEAR PARADISE HILL	WSC	8Q			PRINCE ALBERT
60.	05JE001	MOOSE JAW RIVER ABOVE THUNDER CREEK	WSC	8Q			REGINA
61.	05ND004	MOOSE MOUNTAIN CREEK NEAR OXBOW	WSC	8Q	X		REGINA
62.	05JB007	MOSQUITO CREEK NEAR PAMBRUN	WSC	8Q			REGINA
63.	06BC001	MUDJATIK RIVER NEAR FORCIER LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
64.	05JB004	NOTUKEU CREEK ABOVE ADMIRAL RESERVOIR	WSC	8Q			REGINA
65.	05GD002	OSCAR CREEK NEAR KRYDOR	WSC	8Q			PRINCE ALBERT
66.	07LE004	OTHERSIDE RIVER AT OUTLET OF MERCREDI LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
67.	06EA007	PAGATO RIVER AT OUTLET OF PAGATO LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
68.	05JL005	PHEASANT CREEK NEAR ABERNETHY	WSC	8Q	X		REGINA
69.	05JA004	PINTO CREEK NEAR WOODROW	WSC	8Q			REGINA
70.	07LD003	PIPESTONE RIVER BELOW ROTARIU LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
71.	05MA020	QUILL CREEK NEAR QUILL LAKE	WSC	8Q			PRINCE ALBERT
72.	05MA025	RANCH CREEK ABOVE RANCH LAKE	WSC	8Q			PRINCE ALBERT
73.	05LB005	RED DEER RIVER NEAR STEEN	WSC	8Q			PRINCE ALBERT
74.	05JJ009	SALINE CREEK NEAR NOKOMIS	WSC	8Q			REGINA
75.	05LB006	SHAND CREEK NEAR DILLABOUGH	WSC	8Q			PRINCE ALBERT

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
76.	05GF001	SHELL BROOK NEAR SHELLBROOK	WSC	8Q			PRINCE ALBERT
77.	05ME007	SMITH CREEK NEAR MARCHWELL	WSC	8Q			REGINA
78.	06CC001	SMOOTHSTONE RIVER BELOW EMMELINE LAKE	WSC	12Q			PRINCE ALBERT
79.	05HE001	SNAKEBITE CREEK NEAR BEECHY	WSC	8Q			REGINA
80.	05NB017	SOURIS RIVER NEAR HALBRITE	WSC	8Q	X		REGINA
81.	05MB007	SPIRIT CREEK NEAR BUCHANAN	WSC	8Q			REGINA
82.	05MD010	STONY CREEK NEAR KAMSACK	WSC	8Q			REGINA
83.	05MC002	STONY CREEK NEAR STENEN	WSC	8Q			REGINA
84.	05GF002	STURGEON RIVER NEAR PRINCE ALBERT	WSC	8Q	X		PRINCE ALBERT
85.	05KG002	STURGEON-WEIR RIVER AT OUTLET OF AMISK LAKE	WSC	12Q			PRINCE ALBERT
86.	05LE008	SWAN RIVER NEAR NORQUAY	WSC	12Q	X		REGINA
87.	05HD039	SWIFT CURRENT CREEK NEAR LEINAN	WSC	12Q	X		REGINA
88.	05JG012	THUNDER CREEK NEAR DARMODY	WSC	8Q			REGINA
89.	06DB003	THYME HILL RIVER BELOW MACKENZIE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
90.	05KE002	TORCH RIVER NEAR LOVE	WSC	12Q			PRINCE ALBERT
91.	05EG005	TURTLELAKE RIVER NEAR TURTLEFORD	WSC	8Q			PRINCE ALBERT
92.	05JF004	WASCANA CREEK NEAR SEDLEY	WSC	8Q			REGINA
93.	07LB001	WATERBURY LAKE AT CREW CABIN	WSC	12L		REMOTE	PRINCE ALBERT
94.	07LB002	WATERFOUND RIVER BELOW UNKNOWN LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
95.	06AF005	WATERHEN RIVER NEAR GOODSOIL	WSC	12Q			PRINCE ALBERT
96.	06DC001	WATHAMAN RIVER BELOW WATHAMAN LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
97.	06DA005	WHEELER RIVER BELOW RUSSELL LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
98.	05KE005	WHITE FOX RIVER NEAR GARRICK	WSC	8Q			PRINCE ALBERT
99.	05MB003	WHITESAND RIVER NEAR CANORA	WSC	8Q			REGINA
100.	07MA004	WILLIAM RIVER ABOVE CARSWELL RIVER	WSC	12Q		REMOTE	PRINCE ALBERT

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
101.	05MB005	WILLOW BROOK AT WILLOWBROOK	WSC	BQ			REGINA
102.	05JA002	WOOD RIVER NEAR LAFLECHE	WSC	BQ	X		REGINA
103.	05MB001	YORKTON CREEK NEAR EBENEZER	WSC	BQ			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1989-90
FP3 - REGIONAL WATER QUANTITY 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	15	1.00	15.00
TOTAL		17		15.80
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	76	0.75	57.00
	12Q	10	1.00	10.00
TOTAL		86		67.00
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		103		82.80

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05MA010	BIG QUILL LAKE NEAR KANDAHAR	SWC	8L			REGINA
2.	05KF004	BIG SANDY LAKE ON THE HANSON LAKE ROAD	SWC	8L			REGINA
3.	05EG010	BRIGHTSAND LAKE NEAR ST WALBURG	SWC	8L			REGINA
4.	05JE009	BROKENSHELL CREEK NEAR TROSSACHS	WSC	8Q			REGINA
5.	05KE008	CANDLE LAKE AT CANDLE LAKE	WSC	8L			PRINCE ALBERT
6.	05KA001	CARROT RIVER NEAR KINISTINO	WSC	8Q			PRINCE ALBERT
7.	06AD012	CHITEK LAKE AT CHITEK VILLAGE	SWC	8L			REGINA
8.	05GG009	CHRISTOPHER LAKE NEAR CHRISTOPHER LAKE	SWC	8L			REGINA
9.	05MC004	CONJURING CREEK NEAR PREECEVILLE	WSC	8Q			REGINA
10.	06AE002	COWAN LAKE NEAR HONEYMOON POINT	SWC	8L			REGINA
11.	05FF003	CUTKNIFE CREEK NEAR CUTKNIFE	WSC	8Q			PRINCE ALBERT
12.	06AE004	DELARONDE LAKE NEAR BIG RIVER	SWC	8L			REGINA
13.	05KF003	DESCHAMBAULT LAKE ON THE HANSON LAKE ROAD	SWC	8L			REGINA
14.	05KB011	DOGHIDE RIVER NEAR RUNCIMAN	WSC	8Q	X		PRINCE ALBERT
15.	06AG003	DORE LAKE AT DORE LAKE	SWC	8L			REGINA
16.	05LA003	DUCK CREEK NEAR KELVINGTON	WSC	8Q			PRINCE ALBERT
17.	05GC002	EAGLE CREEK NEAR ANGLIA	WSC	8Q			REGINA
18.	05JK008	ECHO CREEK AT FORT QU'APPELLE	WSC	8Q			REGINA
19.	05GG008	EMMA LAKE NEAR TWEEDSMUIR	SWC	8L			REGINA
20.	05EF006	ENGLISHMAN RIVER NEAR SPRUCE LAKE	WSC	8Q			PRINCE ALBERT
21.	11AE016	FIFE LAKE NEAR LISIEUX	WSC	8L			REGINA
22.	05MB013	FISHING LAKE NEAR WADENA	SWC	8L			REGINA
23.	05JC007	FLOWING WELL WEST INFLOW NEAR FLOWING WELL	WSC	8Q	X		REGINA
24.	05MB010	GOOD SPIRIT LAKE NEAR CANORA	SWC	8L			REGINA
25.	05LB011	GREENWATER LAKE NEAR CHELAN	SWC	8L			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
26.	06AF010	GREIG LAKE NEAR DORINTOSH	SWC	8L			REGINA
27.	05JF014	HUNTER CREEK NEAR RICHARDSON	WSC	8Q			REGINA
28.	05HG021	INVERNESS CREEK NEAR BRODERICK	WSC	8Q			REGINA
29.	05EG003	JACKFISH LAKE NEAR COCHIN	WSC	8L			PRINCE ALBERT
30.	05KG010	JAN LAKE NEAR THE HANSON LAKE ROAD	SWC	8L			REGINA
31.	05KE007	KELSEY CREEK NEAR GARRICK	WSC	8Q			PRINCE ALBERT
32.	05ND009	KENOSEE LAKE NEAR CARLYLE	WSC	8L			REGINA
33.	05LA007	KIPABISKAU LAKE NEAR MCKAGUE	SWC	8L			REGINA
34.	06AF009	LAC DES ILES NEAR GOODSOIL	SWC	8L			REGINA
35.	05HD028	LAC PELLETIER NEAR VESPER	WSC	8L			REGINA
36.	05HC004	LAKE DIEFENBAKER AT SASKATCHEWAN LANDING	WSC	8L			REGINA
37.	05KA011	LENORE LAKE NEAR MIDDLE LAKE	SWC	8L			REGINA
38.	05KF002	LITTLE BEAR LAKE ON THE HANSON LAKE ROAD	SWC	8L			REGINA
39.	05KB008	LITTLE BRIDGE CREEK NEAR ARMLEY	WSC	8Q			PRINCE ALBERT
40.	05MA002	LITTLE QUILL LAKE NEAR WYNYARD	SWC	8L			REGINA
41.	05KE009	LOWER FISHING LAKE ON THE HANSON LAKE ROAD	SWC	8L			REGINA
42.	05LB008	MACNAB CREEK NEAR SOMME	WSC	8Q			PRINCE ALBERT
43.	05LE012	MADGE LAKE NEAR KAMSACK	SWC	8L			REGINA
44.	06AD014	MAKWA LAKE NEAR LOON LAKE	SWC	8L			REGINA
45.	06AD009	MAKWA RIVER AT OUTLET OF MAKWA LAKE	WSC	8Q			PRINCE ALBERT
46.	05GA006	MANITO LAKE NEAR MARSDEN	SWC	8L			REGINA
47.	05LB012	MAREAN LAKE NEAR CHELAN	SWC	8L			REGINA
48.	06AD010	MEADOW RIVER BELOW MEADOW LAKE	WSC	12Q			PRINCE ALBERT
49.	05MA023	MILLIGAN CREEK NEAR WADENA	WSC	8Q			PRINCE ALBERT
50.	05JE002	MOOSE JAW RIVER NEAR LANG	WSC	8Q			REGINA

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
51.	06AD008	MORIN CREEK NEAR MEADOW LAKE	WSC	8Q			PRINCE ALBERT
52.	06AE003	MORIN LAKE NEAR VICTOIRE	SWC	8L			REGINA
53.	05GB004	MUDDY LAKE INFLOW NEAR REVENUE	WSC	8Q			PRINCE ALBERT
54.	06CB003	NEMEIBEN LAKE NEAR LA RONGE	SWC	8L			REGINA
55.	06AE001	NORBURY CREEK NEAR SPIRITWOOD	WSC	8Q			PRINCE ALBERT
56.	05GC007	OPUNTIA LAKE WEST INFLOW	WSC	8Q			REGINA
57.	05LD003	OVERFLOWING RIVER NEAR HUDSON BAY	WSC	8Q			PRINCE ALBERT
58.	05KG009	PELICAN LAKE AT PELICAN NARROWS	SWC	8L			REGINA
59.	05LA004	PIPESTONE CREEK NEAR ROSE VALLEY	WSC	8Q			PRINCE ALBERT
60.	05LB010	PRAIRIE RIVER NEAR PRAIRIE RIVER	WSC	8Q			PRINCE ALBERT
61.	05MA024	RANCH LAKE NEAR ST JAMES	SWC	8L			REGINA
62.	05LA005	RED DEER RIVER NEAR ARCHERWILL	WSC	8Q			PRINCE ALBERT
63.	05GD003	REDBERRY LAKE NEAR KRYDOR	SWC	8L			REGINA
64.	05MA016	ROMANCE CREEK NEAR WATSON	WSC	8Q			PRINCE ALBERT
65.	05JG001	SANDY CREEK NEAR CARON	WSC	8Q			REGINA
66.	05GF004	SHELL LAKE NEAR SHELL LAKE	SWC	8L			REGINA
67.	05HC003	SNIPE LAKE NORTH INFLOW	WSC	8Q			REGINA
68.	05NB031	SOURIS RIVER NEAR BECHARD	WSC	8Q			REGINA
69.	05NB030	SOURIS RIVER NEAR MCTAGGART	WSC	8Q			REGINA
70.	05HF004	SOUTH SASKATCHEWAN RIVER BELOW GARDINER DAM	WSC	12L			REGINA
71.	05GF003	STURGEON LAKE NEAR PRINCE ALBERT	SWC	8L			REGINA
72.	05EG009	TURTLE LAKE NEAR GLASLYN	SWC	8L			REGINA
73.	05HF022	UNNAMED CREEK NEAR CUTBANK	WSC	8Q			REGINA
74.	05KA012	WAKAW LAKE NEAR WAKAW	SWC	8L			REGINA
75.	05KA010	WALDSEA LAKE NEAR HUMBOLDT	SWC	8L			REGINA

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
76.	06AF007	WATERHEN LAKE NEAR DORINTOSH	SWC	8L			REGINA
77.	05ND008	WHITE BEAR (CARLYLE) LAKE NEAR CARLYLE	WSC	8L			REGINA
78.	05JC006	WIWA CREEK NEAR ST. BOSWELLS	WSC	8Q			REGINA
79.	05MB014	YORK LAKE NEAR YORKTON	SWC	8L			REGINA

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1989-90
P1 - PROVINCIAL DEPARTMENTAL 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	7	0.25	1.75
	12L	1	0.40	0.40
	8Q	33	0.75	24.75
	12Q	1	1.00	1.00
TOTAL		42		27.90
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		42		27.90

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
P2 - SPECIFIC PURPOSE MONITORING

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	07QC005	ABITAU RIVER ABOVE CUMING LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
2.	05HG006	BRIGHTWATER RESERVOIR AT RIPARIAN OUTLET	WSC	8L			REGINA
3.	05HF017	BRODERICK RESERVOIR AT WEST EMBANKMENT	WSC	8L			REGINA
4.	06EA010	CHURCHILL RIVER ABOVE MAPLE LEAF RAPIDS	WSC	12Q		REMOTE	PRINCE ALBERT
5.	06EA011	CHURCHILL RIVER ABOVE WINTEGO RAPIDS	WSC	12Q		REMOTE	PRINCE ALBERT
6.	05KD006	CODETTE RESERVOIR ABOVE THE SPILLWAY	WSC	12L			PRINCE ALBERT
7.	11AE014	EAST POPLAR RIVER ABOVE COOKSON RESERVOIR	WSC	8Q			REGINA
8.	11AE015	GIRARD CREEK NEAR CORONACH	WSC	8Q			REGINA
9.	05HG003	PIKE LAKE NEAR SASKATOON	SWC	8L			REGINA
10.	05JB006	RUSSELL CREEK RESERVOIR	WSC	8L			REGINA
11.	05HG019	S.S.E.P. EAST MAIN CANAL BELOW BRODERICK RESERVOIR	WSC	8Q			REGINA
12.	07QC006	TAZIN RIVER ABOVE TAZIN LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
13.	05JE008	WILCOX MAIN DITCH NEAR WILCOX	WSC	8Q			REGINA
14.	05JC005	WOOD RIVER DIVERSION TO CHAPLIN LAKE	WSC	8Q			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1989-90
P2 - SPECIFIC PURPOSE MONITORING
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	4	1.00	4.00
TOTAL		4		4.00
NORMAL ACCESS				
	8L	3	0.25	0.75
	12L	1	0.40	0.40
	8Q	5	0.75	3.75
	12Q	0	1.00	0.00
TOTAL		9		4.90
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		13		8.90

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1989-90
DATA CONTRIBUTED BY SASKATCHEWAN
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	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		0		0.00

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1989-90
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

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1989-90
DATA CONTRIBUTED BY OTHER AGENCY
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	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		0		0.00

APRIL 01, 1989

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1989-90

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	11	0.25	2.75
	12L	11	0.40	4.40
	8Q	18	0.75	13.50
	12Q	23	1.00	23.00
		63		43.65
INTERNATIONAL	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	39	0.75	29.25
	12Q	8	1.00	8.00
		66		42.60
TOTAL		145		100.45
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	85	0.75	63.75
	12Q	15	1.00	15.00
		107		81.25
TOTAL		125		97.45
PROVINCIAL				
REMOTE ACCESS	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	4	1.00	4.00
		4		4.00
NORMAL ACCESS	8L	10	0.25	2.50
	12L	2	0.40	0.80
	8Q	38	0.75	28.50
	12Q	1	1.00	1.00
		51		32.80
TOTAL		55		36.80
GRAND TOTAL		325		234.70

D.3 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.

D.4 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.

D.5 SCHEDULE D: 1989-90

Schedule D to the Memorandum of Agreement is determined jointly by the Coordinating Committee Members for Saskatchewan and Canada and signed prior to April 1 of each year by the Administrators for Saskatchewan and Canada. This Schedule provides a summary of the annual payment to be made by the province and is included in this section.

SCHEDULE D - MEMORANDUM OF AGREEMENT

SASKATCHEWAN HYDROMETRIC SURVEYS

1989-90

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 1989-90 TO BE PAID TO CANADA BY SASKATCHEWAN

		Operation	Construction	Total
a)	Streamflow and water level installations	456 000	37 000	493 000
b)	Sediment installations	1 000	-	1 000
	Total	457 000	37 000	494 000

D.L. MacLeod
Vice President
Resource Management
Saskatchewan Water Corporation
Administrator for Saskatchewan

R.A. Halliday
Regional Director
Inland Waters Directorate
Administrator for Canada

APPENDIX E

ESTIMATED COST OF SCHEDULE D: 1990-91

ESTIMATED COST OF SCHEDULE D - SASKATCHEWAN: 1990-91

A Hydrometric

	No. of Stations	No. of Units	Unit* Cost	Approx Total Cost	Provincial Share
Federal					
Normal Access	63	43.65	5 300	231 345	-
Remote Access	16	14.20	9 200	130 640	-
International	66	42.60	5 900	251 340	-
Sub Total	145	100.45		613 325	
Federal-Provincial					
Normal Access	107	81.25	5 300	430 625	215 312
Remote Access	18	16.20	9 200	149 040	74 520
Sub Total	125	97.45		579 665	289 832
Provincial					
Normal Access	51	32.80	5 300	173 840	173 840
Remote Access	4	4.00	9 200	36 800	36 800
Sub Total	55	36.80		210 640	210 640
Total	325	234.70		1 403 630	500 472

*Unit cost estimates were determined considering operational plans and salary costs for 1990-91.

B Construction

a) Streamflow and water level stations — Sask Water 30 000

C Sediment

The 1990 sediment program consists of 1 seasonal station, 6 miscellaneous stations and 24 special event stations.

The provincial share of the program is for laboratory analysis only as the field costs are absorbed by the hydrometric program. The provincial share is $1000.00

D Provincial Share

a) Operating

Hydrometric	500 472
Sediment	1 000
Total	501 472 or 501 000

b) Construction

Sask Water Corp	30 000

APPENDIX F

NATIONAL GUIDELINES

FOR

FEDERAL AND PROVINCIAL RESPONSIBILITY

FOR

WATER QUANTITY SURVEY STATIONS

NATIONAL GUIDELINES FOR DESIGNATING WATER QUANTITY SURVEY STATIONS

These national guidelines of the Federal-Provincial Memoranda of Agreement for Water Quantity Surveys have been prepared by Canada in consultation with the Provinces for the purpose of designating federal, federal-provincial and provincial water quantity survey stations. In compliance with the agreements, the assignment and review of station designations is the responsibility of each Coordinating Committee.

The intent of these guidelines is to provide a uniform and consistent manner for designating water quantity survey stations throughout Canada. In these guidelines, "water quantity survey stations" have the same definition as in the Memoranda of Agreement and include water level, streamflow and sediment survey stations. The word "stations" in these guidelines means "water quantity survey stations". Where not otherwise specified, the word "Province" means "Province" or "Territory". The designation of each sediment station can be considered separately from the corresponding water quantity survey station designation.

FEDERAL STATIONS

These are stations that support programs of primary interest to the Government of Canada. These stations are funded 100 per cent by Canada in accordance with Article II and the procedures described in Schedules B, C and D (F for the Yukon) (and Schedules E, D, and F for Quebec) of the Memoranda of Agreement.

1. Federal Departmental Programs

These are stations required under statutory obligations that have developed in response to federal legislation and priorities, and as a result of programs of various federal government departments or agencies to provide quantity information on inland waters. These include stations operated in support of specific federal works, benchmark basins, studies or investigations, research projects, and to meet navigational requirements and management responsibilities. A station may be so designated where Canada has formally accepted responsibility for the continued operation of the station under an implementation agreement.

2. Interprovincial Waters

These are stations required for monitoring of waters flowing across or forming part of provincial or territorial boundaries where federal responsibility has been established by an agreement or where justified by an inter-jurisdictional concern.

3. International Waters

These are stations associated with federal responsibilities arising from international agreements, treaties, orders or studies. These include:

(a) Stations specifically named under the Boundary Waters Treaty and those approved officially as "International Gauging Stations".

(b) Stations specifically stipulated under IJC orders, or required to support such orders; to provide for control of waters crossing or forming part of the international boundary and for IJC related study, surveillance, flow regulation or apportionment purposes.

Such stations may also be required for similar studies carried out under unilateral or bilateral mechanism and undertaken in anticipation of the need for formal orders.

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

(d) Stations on streams flowing across or forming part of the international boundary for which Canada has determined that monitoring is required for water management purposes.

4. National Water Quantity Inventory

These are stations that provide information for a national inventory of surface waters. They consist of those stations required to determine water quantity trends in the major drainage basins in Canada that serve to provide an assessment of the total surface water resources and to measure significant discharge to the oceans.

FEDERAL-PROVINCIAL AND/OR FEDERAL-TERRITORIAL STATIONS

These are stations that support program of joint interest to Canada and the Province. The construction and operation of these stations are funded in accordance with Article III and procedures described in Schedules B, C and D (F for the Yukon) (and Schedules E, D and F for Quebec) of the Memoranda of Agreement.

1. Federal-Provincial Agreements

   These are stations where joint federal and provincial (or territorial) responsibility is established under the terms and conditions of an agreement between Canada and one or more Provinces or Territories.

   The joint funding arrangements for any particular agreement must be taken into consideration before designating a station in order to ensure the intended division of financial responsibility. Following the completion of a federal-provincial water study, a station may be designated in this category only if its continuation would be in the joint interest of Canada and the Province.

2. River Basin Management

   These are stations where both Canada and the Province have stated an interest in the need for information to support the management of the water resources of a river basin.

3. Regional Water Quantity Inventory

These are stations that provide an assessment of the quantity of water resources available in distinct hydrologic zones within each Province through representative sampling taking into consideration climatic variability, geographic and geologic differences, levels of population and development, basin size, streamflow regime, relationship to major ground water resources and length of record.

PROVINCIAL AND/OR TERRITORIAL STATIONS

These are stations that support programs of primary interest to a Province. They are funded 100 per cent by the Province in accordance with Article IV and procedures described in Schedules B, C and D (F for the Yukon) (and Schedules E, D, and F for Quebec) of the Memoranda of Agreement.

1. Provincial Departmental Programs

These are stations required strictly for provincial programs where water quantity information on inland waters is needed.

2. Specific Purpose Monitoring Requirements

These are stations established as a result of specific requests of provincial/territorial agencies, municipalities, or non-government organizations. All such requests shall be referred to the Province for screening and funding arrangements before being presented to the applicable Coordinating Committee.