CANADA – SASKATCHEWAN
MEMORANDUM OF AGREEMENT
FOR
WATER QUANTITY SURVEYS
ANNUAL REPORT 1982-1983

SEPTEMBER 1983

CANADA – SASKATCHEWAN

MEMORANDUM OF AGREEMENT

FOR

WATER QUANTITY SURVEYS

ANNUAL REPORT 1982-83

September, 1983

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

Mr. D.A. Davis
Administrator for Canada

In accordance with Article XII of the Memorandum of Agreement for Water Quantity Surveys in the Province of Saskatchewan, signed February 18, 1975, we submit herewith the annual report for fiscal year 1982-83.

Saskatchewan

N.E. Parsons
Saskatchewan Environment

Canada

R.A. Halliday
Environment Canada

Members
Saskatchewan Co-ordinating Committee

August, 1983

Regina, Saskatchewan

EXECUTIVE SUMMARY

The Co-ordinating Committee met once during the period. Several program activities were highlighted during the meeting. These included: the program to install 30 Data Collection Platforms at remote sites over the next five years is to begin in late 1983; proposed changes to the current publication format of hydrometric data; initiation of bucket surveys following selected major rain storms; and, possible changes to the hydrometric network, particularly in response to the water supply study of the Frenchman River basin. Frequent contact was maintained between the members of the Committee and senior staff of both agencies during the year.

The 1982-83 program was completed satisfactorily following greater than normal flows in much of southern Saskatchewan and below normal flows in northern areas. Data computations for 1982 were completed on schedule for publication.

Network expansion was limited during the report period with only one new station being constructed. Three stations were deleted from Schedule A. Maintenance was carried out at 43 sites while station upgrading occurred at an additional 11 sites. A safety inspection program of cableways is ongoing within the Saskatchewan district.

During 1982-83 the Saskatchewan share of the program was $399 564. Payment was received in the amount of $415 260, and together with a deficit from 1981-82 of $16 658, resulted in an underpayment of $962 by the province.

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INTRODUCTION

Canada and Saskatchewan have co-operated in the collection of surface water data beginning with fiscal year 1975/76 under terms set out in a Memorandum of Agreement. The Agreement, along with Schedules A, B, C and D which detail operational, administrative and cost sharing arrangements, is included as Appendix III. This eighth annual report summarizes activities and program cost sharing for the fiscal year ending March 31, 1983.

The federal share of 1982/83 program costs was $695 580; the provincial share was $399 564. A provincial deficit carryover of $16 658 from 1981/82 and a 1982/83 payment of $409 757 results in a provincial deficit of $962 for 1982/83 operations.

SUMMARY OF ACTIVITIES

Co-ordinating Committee Meeting

The Canada-Saskatchewan Co-ordinating Committee on the Hydrometric Agreement met once during the report year on February 11, 1983. Canada was represented by R.A. Halliday, Regional Chief, Water Resources Branch (WRB), Regina while A.B. Banga, Assistant Director, Hydrology Branch, Saskatchewan Environment (SDOE), represented N.E. Parsons, the member for Saskatchewan. The meeting was also attended by P.I. Campbell, Chief, Water Survey of Canada Division, Ottawa. Various items were discussed during the meeting, with most of these being of a routine nature.

It was agreed by both agencies that network changes would again be limited in 1983/84. Decisions taken with respect to the 1983/84 hydrometric network were as follows:

- 21 provincial lake stations have been added to Schedule A as Operated by Saskatchewan.
- 11AE016 Fife Lake near Lisieux (P) operated by Water Survey of Canada (WSC) as of June 1, 1982 added.
- 05HD028 Lac Pelletier near Vesper (P) changed to WSC operation.
- 05NG024 Pipestone Creek near Manitoba Boundary (F) relocated downstream as 05NG024 Pipestone Creek near Saskatchewan Boundary and deleted from Schedule A for Saskatchewan.
- the following station name changes will occur:
  - 05MB011 Patten Creek near Kuroki (P) to Van Pattens Creek near Kuroki
  - 05HH003 Duck Lake Creek near Rosthern (P) to Kohleschmidt Creek near Rosthern.

- the following station numbers will be changed in 1983/84:

  -05JB005 Mosquito Creek near Vanguard (F-P) changed to 05JB007, Mosquito Creek near Pambrun.

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

  -07LA003 Wheeler River below Russell Lake (F-P) changed to 06DA005.

The latter two stations were found to be more representative of basin 06 than the 07 basin. SDOE indicated that an evaluation is in progress to determine the feasibility of re-activating hydrometric stations on Echo Creek and Kap-osvar Creek. In addition, an examination of stations operated as part of the Saskatoon South East Water Supply system is also proposed. These studies will not affect Schedule A for 1983/84.

Several program activities were highlighted during the annual meeting. These included:

- the program to install approximately 30 Data Collection Platforms (DCPs) at remote hydrometric sites is scheduled to begin in late 1983. It is anticipated that approximately six new DCPs will be installed by WSC each year for the next five years. WSC is evaluating new water level encoders for use with these DCPs.

- WSC indicated that it was proposed to establish a Saskatchewan Working Group on Telemetry for interested agencies within the near future.

- Changes to the current publication format of hydrometric data were discussed at the meeting. These arose primarily for economic reasons. No action would be taken on these proposed changes until comments had been received nationally.

- Environment Canada, Atmospheric Environment Service, in conjunction with WSC, have proposed to institute bucket surveys following major rain

storms. Storm criteria have been adopted and a draft action plan developed. It is proposed to test the program this summer. SDOE and PFRA will assist with this program.

- A water supply study of the Frenchman River basin has been completed by SDOE. Part of the report makes recommendations concerning changes to the hydrometric network. The implications of these changes will be discussed jointly by SDOE and WSC personnel.

- SDOE is investigating the current East Poplar River apportionment agreement to determine the impact of a high runoff year followed by a low runoff year.

Other items briefly discussed by the Co-ordinating Committee included:

- Changes to WSC and SDOE personnel

- A final report on the capacity surveys of five reservoirs in southwest Saskatchewan. This report is currently being prepared.

- Six DCP antennas and one test set. These were purchased by WSC on behalf of SDOE.

- Problem hydrometric stations. Several were identified.

- WSC computer installation program. The program is proceeding as scheduled.

- Lake Diefenbaker sedimentation report. A draft is currently being reviewed.

Surface Water Conditions

Precipitation from April 1 to June 30, 1982 was below normal in north-central and south-east Saskatchewan and generally normal elsewhere. The July to October precipitation was above normal in most of the province. Southwest Saskatchewan received snow in late May which replenished many of the reservoirs. A heavy snowfall was also recorded in this area during the last week of September. Near normal to above normal runoff occurred in much of southern Saskatchewan in 1982 while generally below normal flows were prevalent in northern areas. Farm water supplies were much improved over conditions of the previous year. No deficits remained on international streams at the end of the monitoring season.

Network Construction and Development

Network expansion was limited during the report period with only one new station being constructed. The construction program consisted primarily of maintenance and upgrading activities designed to improve record quality and reduce the associated effort and cost. Maintenance was carried out at 43 sites while station upgrading occurred at an additional 11 sites. Two special projects, an evaporation station near Huff Lake and instrumentation of bench mark stability test sites, were also completed.

Staffing problems were encountered by the construction crew in the early part of the season. With above normal runoff in some southern parts of the province, severe erosion at several stations necessitated priority maintenance. These factors contributed to difficulties in completing the construction program as planned.

No decrease in vandalism occurred during the year. Several shelters were again used for target practice with minor shelter components requiring replacement.

In summary, the construction program included installation of the following:

Shelters

a) 1 - new wired shelter
b) 7 - exchanged standard shelters with wired ones
c) 1 - salvaged

Stilling Wells

a) 4 - wood stave stilling wells of various lengths were installed.

Artificial Controls

a) 4 - new steel sheet piling controls
b) 1 - steel sheet piling control repaired and extended
c) 9 - new rock and gravel controls

Cableways

a) 1 - new
b) 1 - relocated
c) 3 - rebuilt with steel A-frames

A safety inspection program of cableways is ongoing within the Saskatchewan district. To date, 30 cableways have been inspected. This has generally necessitated various types of maintenance. A program to replace deteriorated wooden A-frames is underway as the safety of structures is of paramount importance.

Electrical service was installed at eight sites during the construction season. This program will continue in future years where feasible as heating stilling wells in the spring significantly improves record recovery.

The installation of photovoltaic systems at remote sites will increase in 1983-84 as the remote DCP program commences. A report summarizing the photovoltaic experiences of the Saskatchewan district was completed during the year. Problems with existing systems were documented and several specific recommendations were advanced for future systems.

Several rod-type and screw-type bench marks were installed throughout the

Saskatchewan network. A special project was established to test the stability of each of these bench marks. Ten bench marks were installed at five different gauging stations where bench mark instability was apparent. The elevations of the old and new bench marks will be closely monitored to assess their stability.

Construction expenditures during 1982-83 were $92 612 (federal) and $49 904 (provincial). Details of the construction program are documented in the 1982-83 Saskatchewan Construction, Upgrading and Maintenance Annual Report.

Operations

With greater than normal runoff in much of southern Saskatchewan during 1982, hydrometric field staff were kept busy during the freshet. The runoff also created severe erosion at several stations and necessitated additional coverage by field personnel to re-establish rating curves.

Beaver activity continued to be of concern during low flow periods. An experimental installation of an electrified fence at a problem station has shown some promise for beaver control. It is planned to install similar fences at additional stations during 1983.

Six DCP antennas and a test set were purchased by WSC on behalf of SDOE during the year. There are now 13 DCPs within Saskatchewan but servicing and malfunctions of various pieces of peripheral equipment have resulted in a number of these units being inoperative at any particular time. At present, nine of these units are installed. A new generation of DCPs will require training of field staff in their installation, programming and operation.

The hydrometric program experienced several changes in personnel during 1982-83. These changes required additional effort on behalf of the remaining staff to provide the hydrometric coverage and computations necessary to

maintain a high standard of data quality. At the end of the fiscal year, one engineering and one supervisory position were still vacant. The latter position has since been filled but this in turn has created a vacancy in the technical staff. The engineering position may not be filled until fiscal year 1984-85.

WSC Saskatchewan Region was allocated two summer students under the federal Career Oriented Student Employment Program (COSEP) and acquired the services of two term hydrometric assistants during the winter. These persons carried out a number of field and office tasks, freeing up full time staff for computations and maintenance of gauging stations. Accounting of those activities which fell within the cost sharing agreement is contained in the calculation of shareable costs.

Network Changes for 1982-83

Schedule A of the Memorandum of Agreement is reviewed by the Co-ordinating Committee annually. The Schedule identifies the operational and financial responsibility for Saskatchewan stations that are active on April 1st of each year. Network changes from the preceding year (1981-82) as the result of changing responsibility of operation, additions to or deletions from the active network were as follows:

Stations Added

05NG024 Pipestone Creek near Manitoba Boundary. (F)

Stations Deleted

05FE004 Battle River near Saskatchewan Boundary (F)
05FE005 Blackfoot Creek near Saskatchewan Boundary (F)
05JF002 Wascana Lake below Broad Street Weir (P) (Operated by SDOE)

Operational Changes

The following stations have changed operation from SDOE to WSC:

05ND008 White Bear (Carlyle) Lake near Carlyle (P)
05HC002 Snipe Lake near Eston (P)

In addition to the above changes to the 1982-83 Schedule A, the following station changes were also approved jointly by SDOE and WSC but subsequent to April 1, 1982:

05HD028 Lac Pelletier near Vesper (P) changed from SDOE to WSC
11AE016 Fife Lake near Lisieux (P) added to the network for operation by WSC

The net effect of these network changes is to increase the number of station units by 0.40 as indicated in Table 1. Network changes as of April 1, 1982 are indicated in Figure 1 while a summary of 1982-83 station changes and a comparison with 1975-76 station data are presented in Appendix II.

Historical Network Changes

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

Although the number of hydrometric stations operated within Saskatchewan during the last ten or twelve years has been relatively constant, network planning is not dormant. Changes to the network have occurred and will continue to occur in response to perceived needs and priorities, as well as other factors. This dynamic nature is well illustrated from the inception of the cost sharing agreement in the following:

Year	Stations Added*	Stations Deleted
1975-76	52	6
1976-77	11	4
1977-78	6	8
1978-79	10	3
1979-80	0	1
1980-81	3	11
1981-82	2	2
1982-83	1	3
Total	85	38

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

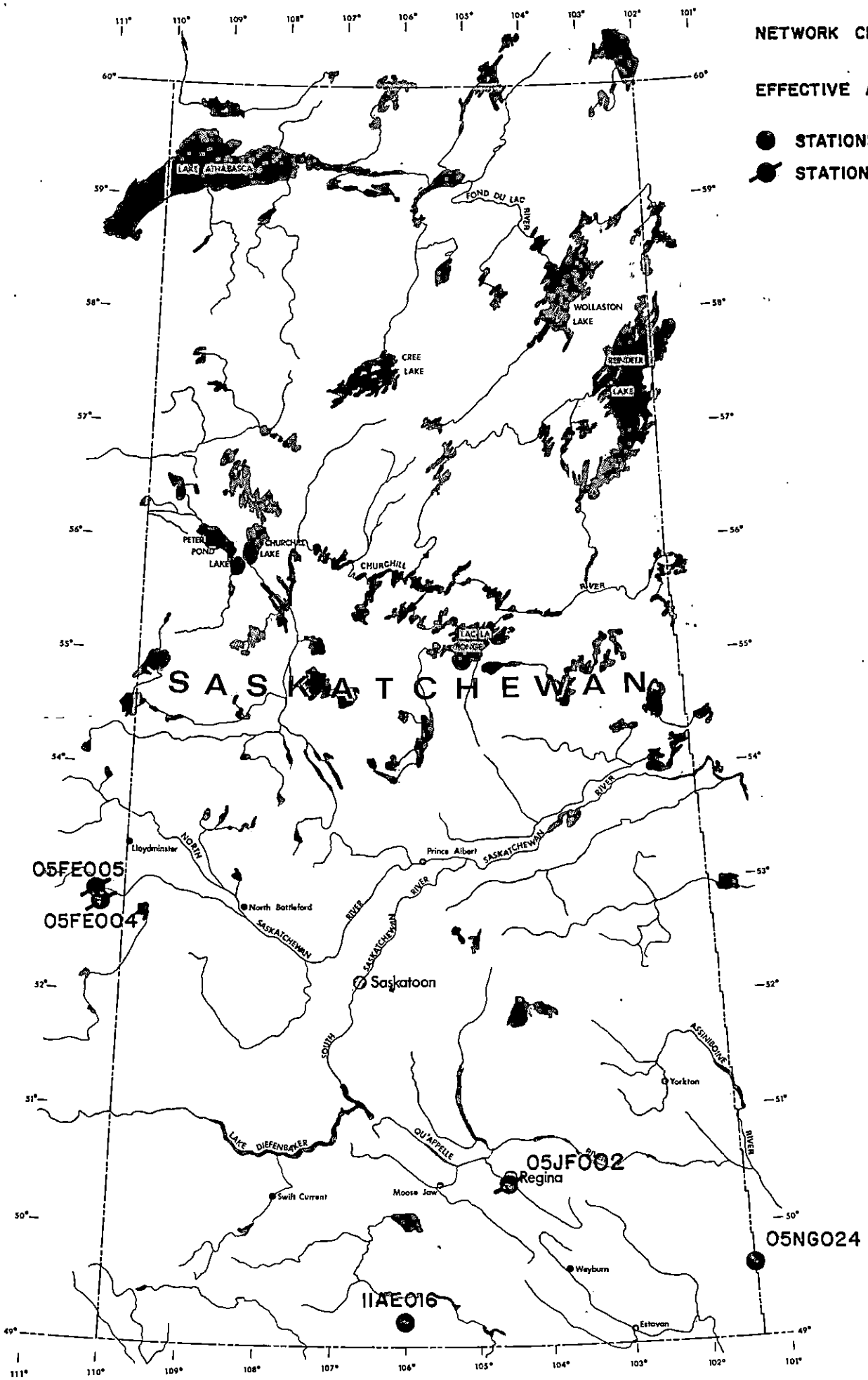
FIGURE 1

NETWORK CHANGES

EFFECTIVE APRIL 1, 1982

● STATIONS ADDED

● STATIONS DELETED



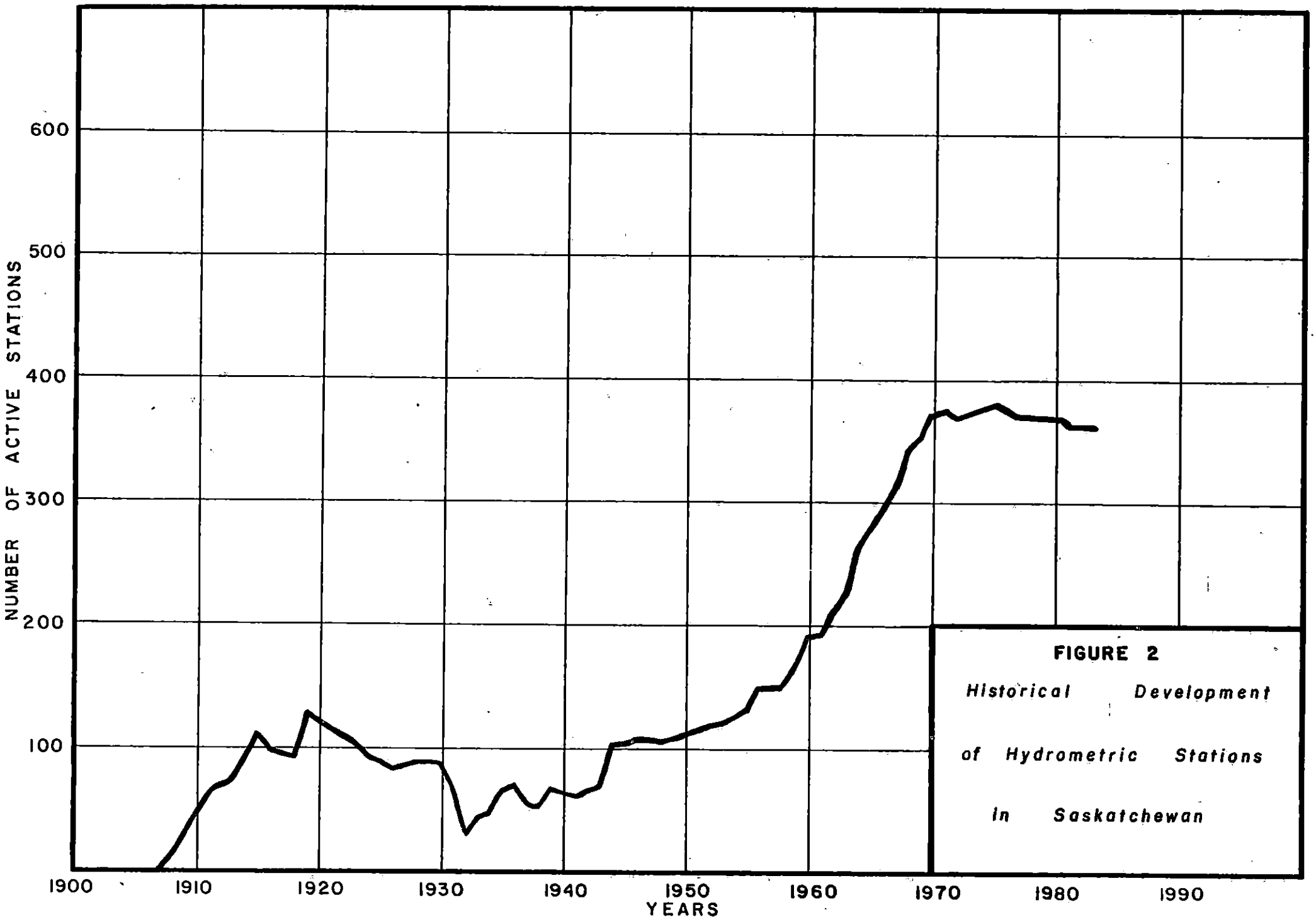
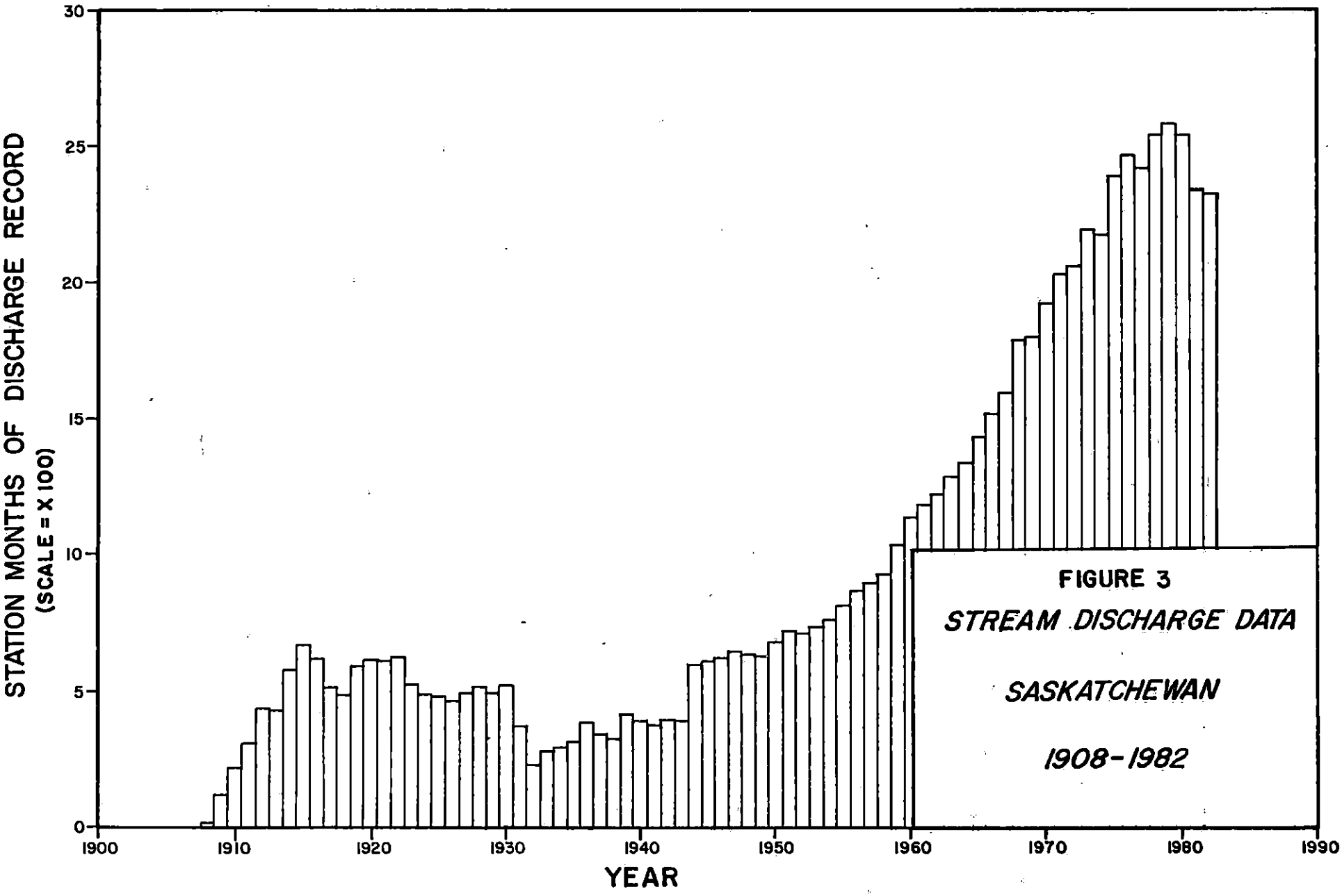


FIGURE 2

Historical Development of Hydrometric Stations In Saskatchewan


STATION MONTHS OF DISCHARGE RECORD
(SCALE = X 100)
30
25
20
15
10
5
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
YEAR
FIGURE 3
STREAM DISCHARGE DATA
SASKATCHEWAN
1908-1982

The stations added to Schedule A over this eight year period represent approximately 24% of the hydrometric network operated by WSC and SDOE as of April 1, 1982, and the stations deleted from the Schedule represent 11% of the network.

In addition to the 123 stations which have been added to or deleted from the network, many station designation changes have also occurred during the period. In general, there has been a significant decrease in the number of federal stations and a large increase in provincial stations. The federal stations represented 52% of the total network in 1975-76 and 39% in 1982-83 while the provincial classification represented 16% in 1975-76 and 25% in 1982-83. The main reason for this change is that a thorough review of Federal and Federal-Provincial stations indicated that there was no longer a federal interest in a large number of stations and the province assumed financial responsibility for these stations. Also, since the inception of the agreement, the requirements for additional stations have mainly been of a provincial nature for regional water resource inventory and studies, water rights, and flow forecasting. Figure 4 illustrates the changing nature of designated responsibility of the hydrometric network operated by WSC since the inception of the cost-sharing agreement.

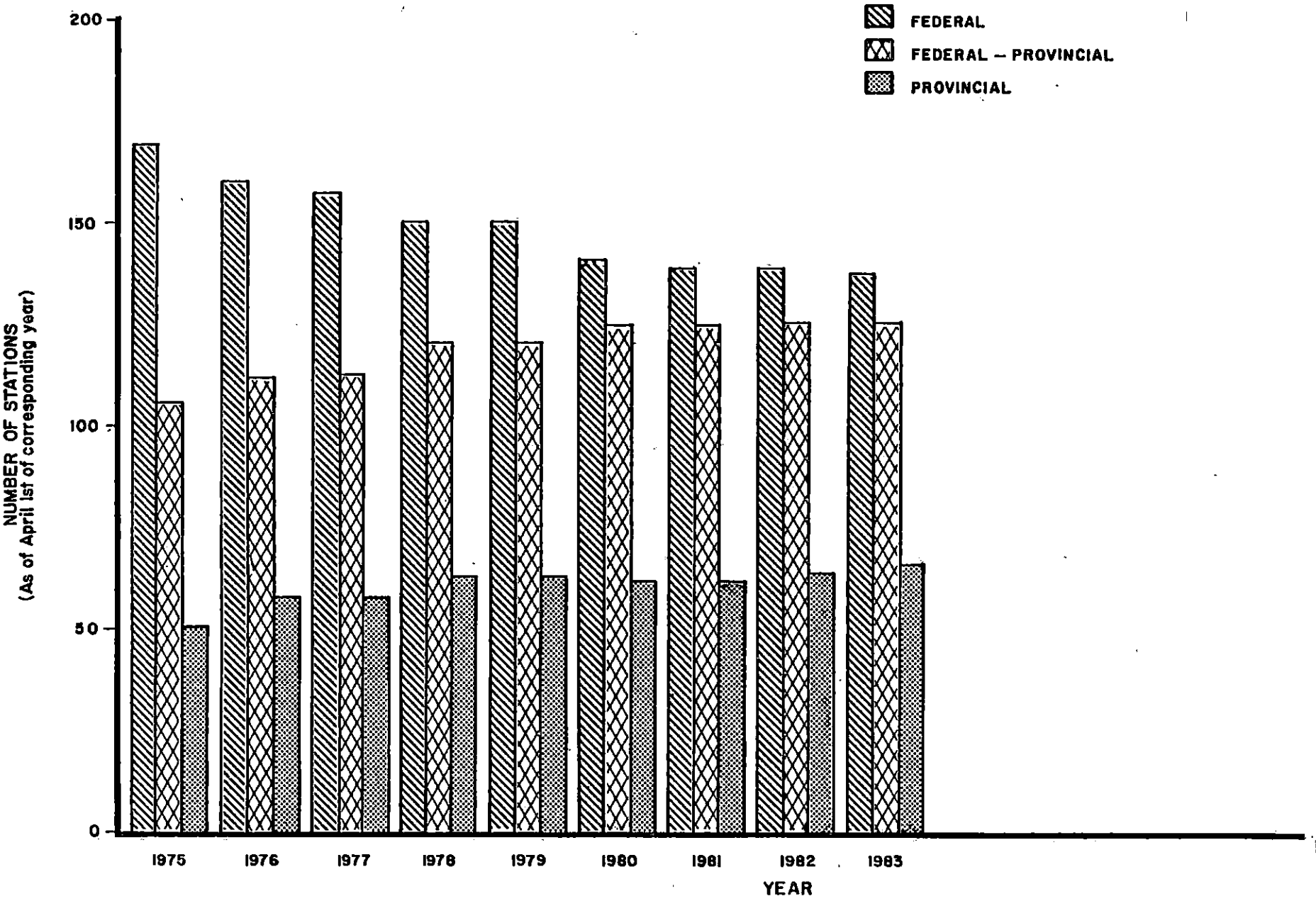


FIGURE 4
DESIGNATED RESPONSIBILITY FOR STATIONS
IN SASKATCHEWAN NETWORK
(Graph only includes those stations operated by Water Survey of Canada)

COST OF OPERATION

Station Units

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

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

8 month water level station (8L) = 0.25

12 month water level station (12L) = 0.40

8 month flow station (8Q) = 0.75

12 month flow station (12Q) = 1.00

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

Station unit costs and total network costs are shown in Table 2 and further developed in Table 3 where the share payable by each agency is calculated. Unit salary costs increased 10% over the previous year with overtime costs being substantially higher than in 1981-82.

Unit operational costs for normal access hydrometric stations decreased from $895 in 1981-82 to $872 this year. This small decrease resulted from a decrease in the cost associated with purchased goods (other than capital) and

with equipment parts and tools associated with normal access hydrometric stations. A slight increase in normal access station units is also a contributing factor.

In contrast, unit operational costs for remote access hydrometric stations increased from $3625 in 1981-82 to $4360 this year. This increase results from an increase in the remote/normal access operating cost ratio which in turn reflects a fuel resupply trip completed during the year as well as the higher cost of purchased services.

Unit capital depreciation costs increased from $209 in 1981-82 to $242 this year. This reflects an increase in field equipment depreciation as old equipment and instrumentation is written off and replaced with new, more costly items. Detailed program costs - salaries, operations and capital - are shown in Appendix I, Tables 5 to 10.

Table 4 shows the change (increase) in station unit costs since the implementation of the cost sharing agreement in 1975. Although overall station unit costs have more than doubled since 1975, some encouragement can be taken from the fact that the average increase in station unit costs is much less in fiscal year 1982-83 than in the previous two years. Hopefully this trend will continue.

TABLE 1

SASKATCHEWAN WATER QUANTITY PROGRAM
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1982-1983

CLASSIFICATION	TYPE*	NO. OF STATIONS**	CONVERSION	UNITS
Federal				
Remote Access	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	13	1.00	13.00
		16		14.20
Normal Access	8L	8	0.25	2.00
	12L	10	0.40	4.00
	8Q	18	0.75	13.50
	12Q	23	1.00	23.00
		59		42.50
International	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	37	0.75	27.75
	12Q	8	1.00	8.00
		64		41.10
Total		139		97.80
Federal-Provincial				
Remote Access	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	15	1.00	15.00
		18		16.20
Normal Access	8L	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	86	0.75	64.50
	12Q	15	1.00	15.00
		108		82.00
Total		126		98.20
Provincial				
Normal Access	8L	11	0.25	2.75
	12L	1	0.40	0.40
	8Q	53	0.75	39.75
	12Q	1	1.00	1.00
Total		66		43.90
Grand Total		331		239.90

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

** From Schedule A (Includes network changes during the year)

TABLE 2

SASKATCHEWAN WATER QUANTITY PROGRAM
COST SUMMARY 1982-1983

Unit Cost Summary

STATION CLASSIFICATION	UNIT	SALARY $	OPERATIONS $	CAPITAL $	TOTAL $
1. Normal Access					
- Non-International	1.0	2183	872	242	3297
- International	1.0	3056	872	242	4170
2. Remote Access	1.0	2401	4360	242	7003

Total Cost Summary

STATION CLASSIFICATION	NO. OF STATIONS	UNITS	SALARY $	OPERATIONS $	CAPITAL $	TOTAL $
Federal						
Remote	16	14.20	34 108	61 912	3 437	99 457
Normal						
- Non-International	59	42.50	92 802	37 060	10 285	140 147
- International	64	41.10	125 643	35 840	9 947	171 430
						411 034
Federal-Provincial						
Remote	18	16.20	38 912	70 632	3 921	113 465
Normal	108	82.00	179 054	71 504	19 844	270 402
						383 867
Provincial						
Normal	66	43.90	95 859	38 281	10 624	144 764
Total	331	239.90	566 378	315 229	58 058	939 665

TABLE 3

SASKATCHEWAN WATER QUANTITY PROGRAM
SHARED COST SUMMARY 1982-1983
(From Table 2 & Construction Report)

FEDERAL SHARE = $411 034 + $\frac{\$383\ 867}{2}$	=	$602 968
FEDERAL CONSTRUCTION SHARE	=	$ 92 612
TOTAL FEDERAL SHARE	=	$695 580
PROVINCIAL SHARE = $\frac{\$383\ 867}{2}$ + $144 764	=	$336 697
PROVINCIAL CONSTRUCTION SHARE	=	$ 49 904
CONSTRUCTION ON BEHALF OF SPC[1]	=	$ 5 503
CAPITAL PURCHASES ON BEHALF OF SDOE[2]	=	$ 8 699
PROVINCIAL CREDIT FOR OPERATION OF ONE F/P STATION[3]	=	($1 239)
TOTAL PROVINCIAL SHARE (1982-83)	=	$399 564
PROVINCIAL DEFICIT (from 1981-82)	=	$ 16 658
NET PROVINCIAL SHARE	=	$416 222
PROVINCIAL PAYMENT FOR CONSTRUCTION[1]	=	($ 5 503)
PROVINCIAL PAYMENT 1982-83	=	($409 757)
PROVINCIAL DEFICIT FOR 1982-83	=	$ 962

1. 11AE015 Girard Creek near Coronach
2. DCP test set, six antennas, sixteen wire weight gauges
3. 05JF012 Wascana Creek below Kronau Marsh

TABLE 4

SASKATCHEWAN WATER QUANTITY PROGRAM
HISTORICAL SUMMARY OF STATION UNIT COSTS

FISCAL YEAR	TYPE OF STATION CONVENTIONAL	INTERNATIONAL	REMOTE
1975-76	$1 583	$1 810	$3 643
	8.7%*	8.9%	8.4%
1976-77	1 721	1 971	3 949
	12.0%	12.6%	6.7%
1977-78	1 928	2 220	4 213
	9.2%	9.6%	6.8%
1978-79	2 106	2 434	4 501
	4.5%	14.7%	2.9%
1979-80	2 200	2 791	4 631
	9.8%	9.5%	27.3%
1980-81	$2 415	$3 055	$5 894
	27.0%	26.1%	1.6%
1981-82	$3 067	$3 852	$5 993
	7.5%	8.3%	16.9%
1982-83	$3 297	$4 170	$7 003
1975-83	108%	130%	92.2%

Average Percent Increase
All Stations = 111%
Since 1975-76

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

APPENDIX I

DETAILED PROGRAM COSTS

DETAILED PROGRAM COSTS

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

Salary Costs

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

Operational Costs

The derivation of station unit operating costs is shown in Table 6. A record of each expenditure is shown in Table 7 while vehicle operating costs are listed in Table 8. A breakdown of 1982/83 operating costs indicates that the cost of operating a remote hydrometric station in Saskatchewan was 5.00 times greater than a normal access station. This reflects high air charter costs and the generally greater cost of travelling in northern areas. In determining station unit operating costs, this remote/normal cost ratio was applied to remote access stations.

Capital Depreciation Costs

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

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

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

TABLE 5
SASKATCHEWAN WATER QUANTITY PROGRAM
SALARY COST 1982-1983

	Position No.	Position Title	Salary
1.	840-1265 (x0.85)	Hydrometric Technician	$ 22 959
2.	840-1279	Hydrometric Supervisor	29 193
3.	840-1285	Hydrometric Supervisor	29 193
4.	840-1370 (x0.65)	Hydrometric Supervisor	18 861
5.	840-1401	Hydrometric Technician	21 933
6.	840-1409 (x0.85)	Hydrometric Technician	27 012
7.	840-1413	Hydrometric Technician	23 726
8.	840-1431 (x0.25)	Sediment Lab Supervisor	6 753
9.	840-1460	Hydrometric Supervisor	29 193
10.	840-1505	Hydrometric Technician	27 012
11.	840-1506	Hydrometric Technician	27 012
12.	840-5619 (x0.10)	Data Control Supervisor	3 325
13.	840-7502	Water Resources Project Engineer	1 950
14.	840-8004	Hydrometric Technician	27 012
15.	840-8012	Hydrometric Technician	27 012
16.	840-8013 (x0.05)	Construction Supervisor	1 460
17.	840-8073	Hydrometric Technician	21 494
18.	840-8119	Hydrometric Technician	27 012
19.	840-8189 (x0.15)	Boundary Waters Engineer	4 250
20.	840-8907	Hydrometric Technician	27 012
21.	840-8913	Hydrometric Technician	27 012
22.	840-8914	Hydrometric Technician	27 012
23.	840-8915 (x0.90)	Hydrometric Technician	24 311
24.	840-8916	Hydrometric Technician	27 012
25.	840-8951	Hydrometric Supervisor	29 193
26.	840-8952 (x0.15)	Computations Technician	3 116
27.	840-9195 (x0.09)	Hydrometric Assistant (Term)	1 506
28.	840-9245 (x0.25)	Hydrometric Assistant (Term)	3 365
29.	COSEP (x0.33)	Hydrometric Assistant	2 891
30.	COSEP (x0.33)	Hydrometric Assistant	2 897
31.	Overtime	All Positions	14 687
	TOTAL	21.95 P-Y's	$566 376

CALCULATION OF STATION UNIT SALARY COST

Station Units	
Remote	30.40
Normal	
- Non-International	168.40
- International	41.10
TOTAL	239.90

Salary-weighted Station Units	
- Remote x1.10	33.44
- Normal, Non-International	168.40
- International x1.40	57.54
TOTAL	259.38

$$\text{Unit Salary Cost} = \frac{\text{Total Salary Cost}}{\text{Salary-weighted Station Units}} = \frac{566\ 376}{259.38} = \$2184$$

Unit Salary Cost Normal = $2184
Unit Salary Cost Remote = $2184 x 1.10 = $2402
Unit Salary Cost International = $2184 x 1.40 = $3058

TABLE 6

SASKATCHEWAN WATER QUANTITY NETWORK
OPERATIONS COST SUMMARY 1982-1983
(Cost Codes 00005-00006-00007)

Travel	$ 48 185
Transportation and Postage	$ 1 645
Communications	$ 11 004
Professional Services	$ 4 752
Purchased Services	$ 55 585
Rentals	$100 460
Purchased Repairs (other than vehicles)	$ 10 912
Purchased Goods (other than capital)	$ 30 648
Equipment Parts and Tools	$ 5 031
	$268 222
Vehicle Operating Costs (Fleet Management System)	$ 46 737
Total Operating Costs	$314 959

Station Units - Normal	209.50
- Remote = 30.4 x 5.00	152.00
	361.50
Unit Operations Cost - Normal = $\frac{\$314\ 959}{361.50}$ =	$ 872
- Remote = $872 x 5.00 =	$ 4 360

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1982 - 1983

Line Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	035	050	179	CAPITAL
Travel																	
- Travel Expenses	85730	0701	21598		11	31412	5992	9582	862	14945	11	446	865		6		
- Car Mileage	154	0702	88			66											
- Car Rental	29	0703	29														
- Non Government Conference	300	0712	300														
- Travel Outside Canada	764	0714						764									
- Travel Non Public Service	314	0716					314										
- Taxi	200	0719	142			33	22		3								
- Other Conferences	3154	0720	1990						1164								
Transportation & Postage																	
- Air	1547	0801	1034			78	435										
- Rail	1974	0802	191	1230		88	38										427
- Truck	1636	0804	412			142	360						9				713
- Bus	305	0805	158			64		42			14				27		
- Unspecified Means	10	0807	10														
- Unspecified Costs	50	0809	50														
- Parcel Post	156	0851	1	17		115	3	20									
- Other Postal Services	5466	0852	5248			151		67									
- Courier Service	597	0853	528			42				27							
Communications																	
- Telephones	290	0901				290											
- Telephone Instal. & Repair	3498	0902	500	17		2797		110		65		9					
- Long Distance	5610	0903	1913	88		2916		272		196		190	35				
- Telephone Rental	16292	0904	10645			3550	171	889					1037				
- Rental of Message Data Equipment	920	0907		920													
- Other Services	3750	0910	3750														
- Miscellaneous Service	130	0911	61	60		5		4									
Advertising & Publications																	
- Publications not for Re-Sale	157	1005	83	74													
- Maps	9	1007											9				

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1982 - 1983

Line Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	035	050	179	CAPITAL
Professional Services																	
- Snow Surveys	1493	1108												1493			
- Gauge Attendants	4752	1115				2824	290	1638									
- Other Scientific Services	14932	1119									14932						
Employee Benevolent Services																	
- Education & University	173	1202	173														
- PSC Courses	2660	1203	2660														
- Training Public Servants	2003	1204	2003														
- Education Not Specified	40	1210	40														
- Not Specified	3	1299											3				
Temporary Help Services																	
- Contract Steno/Typing	320	1301	320														
- Contract Clerical	281	1302	281														
- Other Temporary Help	3394	1303	3394														
Other Purchased Services																	
- Laundry/Dry Cleaning	241	1501	135			106											
- Data Processing Service	42536	1504		1646	9	15376	2855	3734				1026	15511			2379	
- Other Photographic Service	604	1508	347			71	24	11		151							
- Other Business Services	15	1509								15							
- Membership Fees	25	1514	25														
- Printing	3174	1519	2340	86		60				281		87	320				
- Maintenance	218	1521	218														
- Printing Licenses	477	1522	346			128							3				
- Snow & Ice Removal	160	1524	160														
- Conferences & Seminars	35	1530	35														
- DSS Service Charges	12224	1539	7988	121		17	4058			10		30					
- Library Binding	4	1541	4														
- Brokerage Fees	1807	1543	1492			33											282

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1982 - 1983

Line Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	035	050	179	CAPITAL
Rentals																	
- Rental of Land	401	1601					401										
- Machinery/Equipment	3638	1604	536			136				2966							
- Rental of Aircraft	99944	1605				324	94236								5384		
- Motor Vehicles	2934	1607	779			221				1934							
- Data Processing Equipment	14015	1608	14000			15											
- Office Machines	55	1609	55														
- Photocopying	2708	1610	2691			17											
- Other Equipment	83	1613	35			48											
- Rental Gas Cylinders	5062	1614				2025	2531	506									
Equipment Purchased Repairs																	
- General Purpose Machinery	1589	1701	62			425	63	110		929							
- Agricultural Machinery	30	1704				30											
- Miscellaneous Vehicles	382	1705	346							36							
- Electric Lighting	1017	1709	775			239	3										
- Other Electrical	128	1710				124						4					
- Electronic	15	1711	15														
- Measuring	8463	1712	55			7913	495										
- Scientific Equipment	593	1713				590							3				
- Safety Equipment	14	1714				14											
- Office Machines	7687	1716	278										7409				
- Fire Fighting Equipment	172	1718				172											
- Road Motor Vehicles	6330	1720	5952			334	3			41							
- Other Equipment	883	1723	274		94	372	25			118							
- Computer Equipment	596	1727										596					
Buildings & Structures Repairs																	
- Drains	35	1811	35														
Public Utility Services																	
- Electricity	29135	1901	23			25979	1607	1526									

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1982 – 1983

Line Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	035	050	179	CAPITAL
Purchased Materials																	
– Food	247	2012					247										
– Leather	47	2018	42			5											
– Paper	1628	2020				1526	102										
– Chemicals	1219	2021	19			1012	188										
– Non Ferrous Metals	414	2022	4			361				49							
– Rubber Tire Tubes	1814	2023	1804			10											
– Plumbing Equipment	186	2024				186											
– Hand Tools	2157	2025	158			1070	25	50		854							
– Office Machine	26	2026				26											
– Apparel	2467	2027	296			1250	248	248		248							177
– Footware	354	2028				178	176										
– Cleaning Preparation	393	2029	54	114		120	9			47			49				
– Protective Clothing	423	2030	174			134				115							
– Recreation Equipment	225	2031				225											
– Kitchen Utensils	9	2032					9										
– Medicinal	10	2033	10														
– Library Stock	751	2035	728	23													
– Stationers Supplies	6564	2036	5482		76	425	20			46		332	183				
– Photographic Goods	106	2037	20			63	3			20							
– Glassware	153	2041	9	144													
– Other Lab Supplies	5315	2042	89	5086							140						
– Heating Oil	7	2043				7											
– Propane	4394	2044	11			433	3816	134									
– Automotive Gasoline	40516	2045	40516														
– Aviation Gasoline	8632	2047					8632										
– Jet Fuel	678	2048					678										
– Containers	292	2050	243			49											
– Miscellaneous Products	4603	2051	201	63		1358	71			2229							681

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1982 - 1983

Line Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	035	050	179	CAPITAL
- Other Petroleum Products	2774	2052	895			44	1789	3		43							
- Wood Materials	1320	2053	87		70	267	27			869							
- Paint	1174	2054	304			358	14			498							
- Hardware	1976	2055	22			1380	81			493							
- Sand & Gravel	5501	2056								5501							
- Cement	1041	2058	4			354				683							
- Electrical Fittings	3358	2059	891			1212	86	4		73			4				1088
- De-icing Salt	49	2060				49											
- Drafting Supplies	96	2065										75	21				
- Glass	3	2067	3														
- Rope	198	2068				198											
- Fire Extinguishers	218	2069															218
- Garden Supplies	3	2070	3														
- Maps & Charts	220	2071	8			1	206			5							
- Steel	1315	2072				178				1137							
- Locks & Keys	172	2074	136			1				35							
- Bulbs	531	2075				389		142									
- General Stores	93	2077	8			42	43										
- Insulation Materials	51	2078	2			49											
- Chain & Wire Rope	964	2079				181				783							
- Plastic Bags	57	2080	5			12	7			33							
- Safety Supplies	514	2081	251			177				86							
- Data Processing Supplies	2966	2091										1383	1583				
- Other Materials	265	2092	5			260											
Parts & Consumable Tools																	
- General Purpose	227	2101				80				147							
- Agricultural Machinery	46	2104								46							
- Miscellaneous Vehicles	473	2105	473														
- Other Electrical	2	2110	2														

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1982 - 1983

Line Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	035	050	179	CAPITAL
- General Electronic Equipment	15	2111				15											
- Measuring	1533	2112	568			750		6		209							
- Scientific Equipment	1132	2113				796	112	224									
- Safety	150	2115				150											
- Other Equipment	387	2117	60			137	190										
- Office Machines	43	2118		43													
- Road Motor Vehicles	6787	2122	6645							142							
- Batteries	2734	2124	163			1901	532	138									
Acquisition Land & Structure																	
- Retaining Walls/Riprapping	1961	2203															1961
- Gauge Stations	2351	2206								475							1876
- Gravel	495	2209															495
- Power Lines	17919	2218															17919
- Grading	1240	2211															1240
- Well Staves/Sheet Piling	1722	2221															1722
- Other Construction	2849	2225								2849							
Equipment Acquisition																	
- General Purpose Machine	8967	2301															8967
- Heating	80	2307															80
- Electric Light Distribution	1026	2309															1026
- Other Electrical Equipment	176	2310															176
- Electronic Equipment	13106	2311															13106
- Measuring	17099	2312															17099
- Scientific Equipment	83408	2313															83408
- Furniture	1673	2317															1673
- Other Equipment	6181	2318															6181
- Office Machinery Over 500	968	2319															968
- Water Pump	528	2329															528
- Boats	1917	2330															1917
Road Motor Vehicles	6173	2332															6173

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1982 - 1983

Line Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	035	050	179	CAPITAL
Other Payments																	
- Commission	59	2509	59														
- Damage Claims	390	2513	390														
TOTAL	702828		157447	9732	260	116761	131237	20224	2029	39429	15097	4178	27044	1493	5417	2379	170101

TABLE 8

VEHICLE OPERATING COSTS 1982-83*

Vehicle Type	Usage vehicle-months	Cost/Month	Total Cost Construction 010	Hydrometric 005,006,007	Hydro Normal 005	Hydro Remote 006	Hydro Int'l 007
Full Size	94	186.54	6 342.21	11 192.55	8 573.49	223.85	2 395.21
Multi-purpose	84	165.08	329.89	13 536.83	10 369.21	270.74	2 896.88
Light Truck	98	224.57	-	22 008.00	16 858.13	440.16	4 709.71
Med. Truck	24	289.04	6 937.00	-	-	-	-
TOTAL			13 609.10	46 737.38	35 800.83	934.75	10 001.80

* Data extracted from monthly office records of operating costs as annual F.M.I.S. data unavailable. Hydrometric costs for 1982-83 are prorated on basis of 1981-82 Annual Report.

TABLE 9

SASKATCHEWAN WATER QUANTITY PROGRAM
CAPITAL DEPRECIATION COSTS 1982 - 1983

1.	VEHICLE DEPRECIATION - FMIS* DATA			$26 682
2.	EQUIPMENT DEPRECIATION**			
	- Field Equipment	$ 86 492		
	- Marine Equipment	$ 20 138		
	- Scientific Equipment	$ 97 974		
	- Transportation Equipment	$ 13 372		
	- Shop & Construction Equipment	$ 52 207		
	- Accountable Items	$ 59 603		
	Total Inventory Value March 31, 1983	$329 786		
	Total Inventory Value March 31, 1982	$299 091		
	Average Inventory Value For 1982-83	$314 438		
	Capital Depreciation of Equipment @ 10%	$\frac{\$314\ 438}{10}$	=	$31 444
3.	TOTAL CAPITAL DEPRECIATION			$58 126
4.	UNIT CAPITAL DEPRECIATION			
	$= \frac{\text{Total Capital Depreciation}}{\text{Total Station Units}} =$	$\frac{\$\ 58\ 126}{239.90}$	=	$ 242

* Fleet Management Information System
** Departmental Equipment-In-Use Material Management System

TABLE 10

VEHICLE DEPRECIATION
SASKATCHEWAN FY 1982-83

Vehicle Number	Original Capital Cost $	Depr. per month $	Time in use Months	Annual Depr. $	Remarks
Station Wagons - Lifetime 5 years (60 months)					
77-297	5 242	87	12	1 044	
78-339	5 653	94	10	940	Construction - CADC - Feb. 83
78-340	5 653	94	12	1 128	
79-462	6 806	113	12	1 356	
81-045	7 874	131	12	1 572	Construction
81-046	7 874	131	12	1 572	
81-047	7 874	131	12	1 572	
81-048	7 874	131	1	131	Office Car
Multi-Purpose Vehicles or Trucks - Lifetime 6 years (72 Months)					
76-048	6 438	89	12	1 068	
77-036	5 176	72	10	719	CADC - Feb. 83
78-009	4 664	65	12	780	
78-047	7 020	98	4	392	Construction - CADC - Aug. 82
78-067	20 166	280	12	3 360	Construction
78-341	5 166	72	12	864	
79-192	7 327	102	12	1 224	
79-193	7 219	100	12	1 200	
79-213	7 198	100	12	1 200	
80-102	6 181	86	12	1 032	
80-103	6 181	86	12	1 032	
80-104	9 506	132	12	1 584	
80-105	7 913	110	12	1 320	
80-106	11 233	156	12	1 872	
81-044	9 919	138	12	1 656	
82-068	12 295	171	12	2 052	
82-069	12 295	171	12	2 052	
82-070	9 276	129	8	1 032	Construction
83-002	8 059	112	2	224	
83-003	12 719	177	2	354	Construction

Actual replacement cost of Saskatchewan Vehicles in 1982/83 was $54 644

Field surveys Vehicles Depreciation (excluding Construction Vehicles) $26 682

Construction Vehicles Depreciation = $7 650 (Charged to individual projects)

Total Depreciation = $34 332

APPENDIX II

STATION AND COST SUMMARY DATA

FOR INCLUSION IN NATIONAL ANNUAL REPORT

Province: SASKATCHEWAN

TABLE 1
WATER QUANTITY SURVEYS
GAUGING STATION DATA FOR 1982-83

No. of Stations			Changes during 1982-83		Stn. Designation April 1, 1982			
April 1/81	April 1/82	Change	Added	Discontinued	Fed.	F/P	Prov.	Contrib.
359	357	-2	1	3	(2)* 139	127	91	11

*Bracket Sediment Stations

TABLE 2
WATER QUANTITY SURVEYS
COMPARATIVE GAUGING STATION DATA April 1/75 . April 1, 1982

Federal Stations			F/P Stations			Provincial Stations			Total Stations		
Apr 1/75	Apr 1/82	Chge	Apr 1/75	Apr 1/82	Chge	Apr 1/75	Apr 1/82	Chge	Apr 1/75	Apr 1/82	Chge
173	139	-34	106	127	+21	51	91	+40	330	357	+27

TABLE 3
WATER QUANTITY SURVEYS
DETAILED GAUGING STATION DATA 1982-83

F-1	F-2	F-3	F-4	F-5	F-6	F-7	Total F	F/P	P	Contributed	Total-All
11	(2) 44	64	1	0	0	19	139	127	91	11	368

Bracket Sediment Stations in all categories.

Province: SASKATCHEWAN

TABLE 4
WATER QUANTITY SURVEYS
TOTAL PROGRAM COSTS & SHAREABLE COSTS FOR 1982-83
(× $1000)

Total Program Costs					Shareable Costs						
P/Yrs	Sal.	Oper.	Cap.	Total	P/Yrs	Sal.	Oper. *	Const.	Total	F Share	P Share
38.0	1071.2	522.1	180.1	1773.4	21.95	566.4	373.3	156.7	1096.4	696.8	399.6

TABLE 5
WATER QUANTITY SURVEYS
SUMMARY OF SCHEDULES D/F - 1982-83

Streamflow & Water Level		Sediment		Total
Operation	Construction	Operation	Construction	
330 000	50 000	0	0	380 000

TABLE 6
WATER QUANTITY SURVEYS
COMPARISON - SCHEDULED & ACTUAL COSTS FOR 1982-83
(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		
330 000	335 458	50 000	64 106*	380 000	399 564	-19 564	415 260	15 696**

* Includes $14 202 for capital purchases on behalf of SDOE and construction on behalf of SPC
** Deficit for 1981-82 = $16 658, therefore net 1982-83 Saskatchewan deficit = $15 696 - $16 658 = $962

APPENDIX III

CANADA – SASKATCHEWAN

MEMORANDUM OF AGREEMENT

FOR

WATER QUANTITY SURVEYS

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

BETWEEN:

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

OF THE FIRST PART

-and-

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

OF THE SECOND PART.

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

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

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

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

DEFINITIONS

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

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

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

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

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

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

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

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

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

ARTICLE I

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

OPERATIONAL CONSIDERATIONS

ARTICLE II

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

ARTICLE III

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

ARTICLE IV

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

ARTICLE V

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

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

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

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

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

FINANCIAL CONSIDERATIONS

ARTICLE VI

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

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

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

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

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

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

ARTICLE VII

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

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

ARTICLE VIII

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

ARTICLE IX

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

ARTICLE X

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

CO-OPERATION

ARTICLE XI

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

ARTICLE XII

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

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

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

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

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

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

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

ADMINISTRATIVE ARRANGEMENTS

ARTICLE XIII

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

IMPLEMENTATION

ARTICLE XIV

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

PERIOD OF AGREEMENT

ARTICLE XV

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

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

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

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

SCHEDULE A

APR 01 1982

SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL 1. SUPPORT NATIONAL PROGRAMS

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

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1982-83
FEDERAL 1. SUPPORT NATIONAL PROGRAMS
UNIT SUMMARY

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

SCHEDULE A

APR 01 1982

SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL 2. INTERPROVINCIAL RIVERS

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

SCHEDULE A

APR 01 1982

SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL 2. INTERPROVINCIAL RIVERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
24.	05EF001	NORTH SASKATCHEWAN RIVER NEAR DEER CREEK	WSC	12Q			PRINCE ALBERT
25.	05NG024	PIPESTONE CREEK NEAR MANITOBA BOUNDARY	WSC	8Q			REGINA
26.	05JG004	QU'APPELLE RIVER ABOVE BUFFALO POUND LAKE	WSC	12Q			REGINA
27.	05JM013	QU'APPELLE RIVER AT HYDE	WSC	8Q			REGINA
28.	05JK002	QU'APPELLE RIVER BELOW CRAVEN DAM	WSC	12Q			REGINA
29.	05JL001	QU'APPELLE RIVER BELOW KATEPWA LAKE	WSC	12Q			REGINA
30.	05JK007	QU'APPELLE RIVER BELOW LOON CREEK	WSC	12Q			REGINA
31.	05JG007	QU'APPELLE RIVER BELOW MOOSE JAW RIVER	WSC	12Q			REGINA
32.	05JF001	QU'APPELLE RIVER NEAR LUMSDEN	WSC	12Q			REGINA
33.	05JM001	QU'APPELLE RIVER NEAR WELBY	WSC	12Q			REGINA
34.	05LC001	RED DEER RIVER NEAR ERWOOD	WSC	12Q			PRINCE ALBERT
35.	05HD033	REID LAKE NEAR DUNCAIRN	WSC	12L			REGINA
36.	05JG013	RIDGE CREEK NEAR BRIDGEFORD	WSC	8Q			REGINA
37.	05JM007	ROUND LAKE NEAR WHITEWOOD	WSC	12L			REGINA
38.	05KH008	SASKATCHEWAN RIVER NEAR MANITOBA BOUNDARY	WSC	12Q		REMOTE	WINNIPEG
39.	05JH007	SILTON INDEX RESERVOIR	WSC	8L			REGINA
40.	05HG001	SOUTH SASKATCHEWAN RIVER AT SASKATOON	WSC	12Q			REGINA
41.	05HH001	SOUTH SASKATCHEWAN RIVER AT ST. LOUIS	WSC	12Q			PRINCE ALBERT
42.	05HD034	SWIFT CURRENT CANAL AT SWIFT CURRENT	WSC	8Q			REGINA
43.	05MB009	THEODORE RESERVOIR NEAR THEODORE	WSC	8L			REGINA
44.	05JF005	WASCANA CREEK NEAR LUMSDEN	WSC	12Q			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1982-83
FEDERAL 2. INTERPROVINCIAL RIVERS
UNIT SUMMARY

APR 01 1982

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	2	1.00	2.00
TOTAL		2		2.00
NORMAL ACCESS				
	8L	5	0.25	1.25
	12L	8	0.40	3.20
	8Q	11	0.75	8.25
	12Q	18	1.00	18.00
TOTAL		42		30.70
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		44		32.70

SCHEDULE A

APR 01 1982

SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL 3. INTERNATIONAL COMMITMENTS

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

SCHEDULE A

APR 01 1982

SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL 3. INTERNATIONAL COMMITMENTS

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

SCHEDULE A

APR 01 1982

SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL 3. INTERNATIONAL COMMITMENTS

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

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1982-83
FEDERAL 3. INTERNATIONAL COMMITMENTS
UNIT SUMMARY

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

SCHEDULE A

APR 01 1982

SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL 4. MAJOR NAVIGATIONAL IMPORTANCE

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

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1982-83
FEDERAL 4. MAJOR NAVIGATIONAL IMPORTANCE
UNIT SUMMARY

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

SCHEDULE A

APR 01 1982

SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL 7. NATIONAL STREAM INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	06CA004	BIGSTONE LAKE NEAR LA RONGE	WSC	12L			PRINCE ALBERT
2.	05KC001	CARROT RIVER NEAR SMOKY BURN	WSC	12Q			PRINCE ALBERT
3.	07LC002	CHIPMAN RIVER ABOVE BLACK LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
4.	06CD002	CHURCHILL RIVER ABOVE OTTER RAPIDS	WSC	12Q			PRINCE ALBERT
5.	06BB003	CHURCHILL RIVER NEAR PATUANAK	WSC	12Q		REMOTE	PRINCE ALBERT
6.	07CD006	CLEARWATER RIVER AT OUTLET OF LLOYD LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
7.	07LD001	CREE LAKE AT CABLE BAY	WSC	12L		REMOTE	PRINCE ALBERT
8.	07LD002	CREE RIVER AT OUTLET OF WAPATA LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
9.	06BA002	DILLON RIVER AT OUTLET OF DILLON LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
10.	07LE002	FOND DU LAC RIVER AT OUTLET OF BLACK LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
11.	07LA002	GEIKIE RIVER BELOW WHEELER RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
12.	07LE003	GREASE RIVER BELOW FONTAINE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
13.	06BD001	HAULTAIN RIVER ABOVE NORBERT RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
14.	07MB001	MACFARLANE RIVER AT OUTLET OF DAVY LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
15.	06CA001	MONTREAL RIVER AT OUTLET OF BIGSTONE LAKE	WSC	12Q			PRINCE ALBERT
16.	05KJ014	PASQUIA RIVER AT HIGHWAY NO. 9	WSC	8Q			PRINCE ALBERT
17.	07LC003	PORCUPINE RIVER AT OUTLET OF GROVE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
18.	05HD036	SWIFT CURRENT CREEK BELOW ROCK CREEK	WSC	12Q			REGINA
19.	06DA001	WOLLASTON LAKE AT ROSS CHANNEL	WSC	12L		REMOTE	PRINCE ALBERT

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1982-83
FEDERAL 7. NATIONAL STREAM INVENTORY
UNIT SUMMARY

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

SCHEDULE A

APR 01 1982

SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL-PROVINCIAL

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

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SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL-PROVINCIAL

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
24.	05MB006	CROOKED HILL CREEK NEAR CANORA	WSC	8Q			REGINA
25.	05EG004	CRYSTAL CREEK NEAR IFFLEY	WSC	8Q			PRINCE ALBERT
26.	05KH002	CUMBERLAND LAKE NEAR CUMBERLAND HOUSE	WSC	12L			PRINCE ALBERT
27.	05JM015	CUTARM CREEK NEAR SPY HILL	WSC	8Q			REGINA
28.	07CD007	DESCHARME RIVER BELOW DUPRE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
29.	06AG002	DORE RIVER NEAR THE MOUTH	WSC	12Q		REMOTE	PRINCE ALBERT
30.	07MA003	DOUGLAS RIVER NEAR CLUFF LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
31.	05HH003	DUCK LAKE CREEK NEAR ROSTHERN	WSC	8Q			PRINCE ALBERT
32.	05GC006	EAGLE CREEK NEAR ENVIRON	WSC	8Q			REGINA
33.	05LB002	ETOMAMI RIVER NEAR BERTWELL	WSC	8Q			PRINCE ALBERT
34.	05GA007	EYEHILL CREEK NEAR MACKLIN	WSC	8Q			PRINCE ALBERT
35.	05LB007	FIR RIVER NEAR HUDSON BAY	WSC	12Q			PRINCE ALBERT
36.	06CE001	FOSTER RIVER ABOVE CHURCHILL RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
37.	05NF013	GAINSBOROUGH CREEK NEAR STORTHOAKS	WSC	8Q			REGINA
38.	05GG010	GARDEN RIVER NEAR HENRIBOURG	WSC	8Q			PRINCE ALBERT
39.	05NA005	GIBSON CREEK NEAR RADVILLE	WSC	8Q			REGINA
40.	05KA009	GOOSEHUNTING CREEK NEAR BEATTY	WSC	8Q			PRINCE ALBERT
41.	05HF016	GREENLEIGH RESERVOIR NEAR BICKLEIGH	WSC	8L			REGINA
42.	05HB002	HAPPYLAND CREEK NEAR FOX VALLEY	WSC	8Q			REGINA
43.	11AE010	HAY MEADOW CREEK NEAR LISIEUX	WSC	8Q			REGINA
44.	05MA012	IRONSPRING CREEK NEAR WATSON	WSC	8Q			REGINA
45.	05JG014	ISKWAO CREEK NEAR CRAIK	WSC	8Q			REGINA
46.	05NB014	JEWEL CREEK NEAR GOODWATER	WSC	8Q			REGINA

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SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL-PROVINCIAL

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
47.	05JK004	JUMPING DEER CREEK NEAR LIPTON	WSC	8Q			REGINA
48.	06BB004	KEELEY RIVER AT OUTLET OF KEELEY LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
49.	05JG015	KNOX COULEE NEAR TUXFORD	WSC	8Q			REGINA
50.	06CB001	LAC LA RONGE AT LA RONGE	WSC	12L			PRINCE ALBERT
51.	05JD004	LAKE OF THE RIVERS WEST INFLOW	WSC	8Q			REGINA
52.	05JJ003	LANIGAN CREEK ABOVE BOULDER LAKE	WSC	8Q			REGINA
53.	05KB006	LEATHER RIVER NEAR STAR CITY	WSC	8Q			PRINCE ALBERT
54.	05JH005	LEWIS CREEK NEAR IMPERIAL	WSC	8Q			REGINA
55.	05NF006	LIGHTNING CREEK NEAR CARNDUFF	WSC	8Q			REGINA
56.	05MC003	LILIAN RIVER NEAR LADY LAKE	WSC	8Q			REGINA
57.	05LB004	LOISELLE CREEK NEAR HUDSON BAY	WSC	8Q			PRINCE ALBERT
58.	05NA004	LONG CREEK NEAR MAXIM	WSC	8Q			REGINA
59.	05HF005	MACDONALD CREEK NEAR BOUNTY	WSC	8Q			REGINA
60.	05MA021	MAGNUSSON CREEK NEAR WYNYARD	WSC	8Q			REGINA
61.	06AD007	MAKWA RIVER AT RAPID VIEW	WSC	8Q			PRINCE ALBERT
62.	05LE011	MALONECK CREEK NEAR PELLY	WSC	8Q			REGINA
63.	05JA003	MCDONALD CREEK NEAR MCCORD	WSC	8Q			REGINA
64.	05HF015	MCDONALD TRIBUTARY NEAR TOTNES	WSC	8Q			REGINA
65.	05EF004	MONNERY RIVER NEAR PARADISE HILL	WSC	8Q			PRINCE ALBERT
66.	06CA005	MONTREAL LAKE NEAR MOLANOSA	WSC	12L			PRINCE ALBERT
67.	06CA003	MONTREAL RIVER AT HIGHWAY NO. 2	WSC	12Q			PRINCE ALBERT
68.	05JE001	MOOSE JAW RIVER ABOVE THUNDER CREEK	WSC	8Q			REGINA
69.	05JE004	MOOSE JAW RIVER NEAR ROULEAU	WSC	8Q			REGINA

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SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL-PROVINCIAL

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
70.	05NC001	MOOSE MOUNTAIN CREEK BELOW MOOSE MOUNTAIN LAKE	WSC	8Q			REGINA
71.	05ND004	MOOSE MOUNTAIN CREEK NEAR OXBOW	WSC	8Q			REGINA
72.	05NE002	MOOSOMIN RESERVOIR NEAR MOOSOMIN	WSC	8L			REGINA
73.	05JB005	MOSQUITO CREEK NEAR PAMBRUN	WSC	8Q			REGINA
74.	06BC001	MUDJATIK RIVER NEAR FORCIER LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
75.	05JB004	NOTUKEU CREEK ABOVE ADMIRAL RESERVOIR	WSC	8Q			REGINA
76.	05JB001	NOTUKEU CREEK NEAR VANGUARD	WSC	8Q			REGINA
77.	05GD002	OSCAR CREEK NEAR KRYDOR	WSC	8Q			PRINCE ALBERT
78.	07LE004	OTHERSIDE RIVER AT OUTLET OF MERCREDI LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
79.	06EA007	PAGATO RIVER AT OUTLET OF PAGATO LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
80.	05JL005	PHEASANT CREEK NEAR ABERNETHY	WSC	8Q			REGINA
81.	05JA004	PINTO CREEK NEAR WOODROW	WSC	8Q			REGINA
82.	05NE001	PIPESTONE CREEK NEAR MOOSOMIN	WSC	8Q			REGINA
83.	07LD003	PIPESTONE RIVER BELOW ROTARIU LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
84.	06BC002	PORTER LAKE AT CREW CABIN	WSC	12L		REMOTE	PRINCE ALBERT
85.	05MA020	QUILL CREEK NEAR QUILL LAKE	WSC	8Q			REGINA
86.	05MA014	RANCH CREEK NEAR ANNAHEIM	WSC	8Q			REGINA
87.	05LB005	RED DEER RIVER NEAR STEEN	WSC	8Q			PRINCE ALBERT
88.	05HF013	RIDALLS TRIBUTARY BELOW GREENLEIGH RESERVOIR	WSC	8Q			REGINA
89.	05JJ009	SALINE CREEK NEAR NOKOMIS	WSC	8Q			REGINA.
90.	05KD003	SASKATCHEWAN RIVER BELOW TOBIN LAKE	WSC	12Q			PRINCE ALBERT
91.	05KH009	SASKATCHEWAN RIVER OLD CHANNEL	WSC	12Q			PRINCE ALBERT
92.	05LB006	SHAND CREEK NEAR DILLABOUGH	WSC	8Q			PRINCE ALBERT

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SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL-PROVINCIAL

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
93.	05GF001	SHELL BROOK NEAR SHELLBROOK	WSC	8Q			PRINCE ALBERT
94.	05ME007	SMITH CREEK NEAR MARCHWELL	WSC	8Q			REGINA
95.	06CC001	SMOOTHSTONE RIVER BELOW EMMELINE LAKE	WSC	12Q			PRINCE ALBERT
96.	05HE001	SNAKEBITE CREEK NEAR BEECHY	WSC	8Q			REGINA
97.	05NB017	SOURIS RIVER NEAR HALBRITE	WSC	8Q			REGINA
98.	05NB009	SOURIS RIVER NEAR ROCHE PERCEE	WSC	8Q			REGINA
99.	05MB007	SPIRIT CREEK NEAR BUCHANAN	WSC	8Q			REGINA
100.	05MD010	STONY CREEK NEAR KAMSACK	WSC	8Q			REGINA
101.	05MC002	STONY CREEK NEAR STENEN	WSC	8Q			REGINA
102.	05GF002	STURGEON RIVER NEAR PRINCE ALBERT	WSC	8Q			PRINCE ALBERT
103.	05KG007	STURGEON-WEIR RIVER AT LEAF RAPIDS	WSC	12Q			PRINCE ALBERT
104.	05KB002	STURGEON-WEIR RIVER AT OUTLET OF AMISK LAKE	WSC	12Q			WINNIPEG
105.	05LE008	SWAN RIVER NEAR NORQUAY	WSC	12Q			REGINA
106.	05HD041	SWIFT CURRENT CREEK BELOW REID LAKE	WSC	12Q			REGINA
107.	05HD039	SWIFT CURRENT CREEK NEAR LEINAN	WSC	12Q	X		REGINA
108.	07QC002	TAZIN LAKE NEAR OUTLET	WSC	12L		REMOTE	PRINCE ALBERT
109.	05JG012	THUNDER CREEK NEAR DARMODY	WSC	8Q			REGINA
110.	06DB003	THYMEHILL RIVER BELOW MACKENZIE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
111.	05KE002	TORCH RIVER NEAR LOVE	WSC	12Q			PRINCE ALBERT
112.	05EG005	TURTLELAKE RIVER NEAR TURTLEFORD	WSC	8Q			PRINCE ALBERT
113.	05JF012	WASCANA CREEK BELOW KRONAU MARSH	SDOE	8Q			REGINA
114.	05JF004	WASCANA CREEK NEAR SEDLEY	WSC	8Q			REGINA
115.	05JF015	WASCANA LAKE AT MARINA	WSC	12L			REGINA

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SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
FEDERAL-PROVINCIAL

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
116.	07LB001	WATERBURY LAKE AT CREW CABIN	WSC	12L		REMOTE	PRINCE ALBERT
117.	07LB002	WATERFOUND RIVER BELOW UNKNOWN LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
118.	06AF005	WATERHEN RIVER NEAR GOODSOIL	WSC	12Q			PRINCE ALBERT
119.	06DC001	WATHAMAN RIVER BELOW WATHAMAN LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
120.	07LA003	WHEELER RIVER BELOW RUSSELL LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
121.	05KE005	WHITE FOX RIVER NEAR GARRICK	WSC	8Q			PRINCE ALBERT
122.	05MB003	WHITESAND RIVER NEAR CANORA	WSC	8Q			REGINA
123.	05MB008	WHITESAND RIVER NEAR SPRINGSIDE	WSC	8Q			REGINA
124.	07MA004	WILLIAM RIVER ABOVE CARSWELL RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
125.	05MB005	WILLOW BROOK AT WILLOWBROOK	WSC	8Q			REGINA
126.	05JA002	WOOD RIVER NEAR LAFLECHE	WSC	8Q			REGINA
127.	05MB001	YORKTON CREEK NEAR EBENEZER	WSC	8Q			REGINA

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1982-83
FEDERAL-PROVINCIAL
UNIT SUMMARY

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

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SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
PROVINCIAL

APR 01 1982

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05LA006	BARRIER RIVER BELOW BARRIER LAKE	WSC	8Q			PRINCE ALBERT
2.	05MA022	BECKETT BROOK NEAR FOAM LAKE	WSC	8Q			REGINA
3.	05MA010	BIG QUILL LAKE NEAR KANDAHAR	SDOE	8L			REGINA
4.	05KH014	BIRCH RIVER MARSH NEAR CUMBERLAND HOUSE	DU	12L		REMOTE	PRINCE ALBERT
5.	05KH013	BIRCH RIVER NEAR MANITOBA BOUNDARY	SDOE	12Q		REMOTE	REGINA
6.	05KE006	BISSETT CREEK NEAR CHOICELAND	WSC	8Q			PRINCE ALBERT
7.	05HG014	BLACKSTRAP RESERVOIR AT SOUTH SIDE OF CAUSEWAY	SDOE	8L			REGINA
8.	05HG013	BRADWELL RESERVOIR AT PUMP STATION	SDOE	8L			REGINA
9.	05HG020	BRIGHTWATER CREEK NEAR PROCTOR LAKE	WSC	8Q			REGINA
10.	05HG006	BRIGHTWATER RESERVOIR AT RIPARIAN OUTLET	SDOE	8L			REGINA
11.	05HF017	BRODERICK RESERVOIR AT WEST EMBANKMENT	WSC	8L			REGINA
12.	05JE009	BROKENSHELL CREEK NEAR TROSSACHS	WSC	8Q			REGINA
13.	05KE008	CANDLE LAKE AT CANDLE LAKE	WSC	8L			PRINCE ALBERT
14.	05KA001	CARROT RIVER NEAR KINISTINO	WSC	8Q			PRINCE ALBERT
15.	06AD012	CHITEK LAKE AT CHITEK VILLAGE	SDOE	8L			REGINA
16.	05GG009	CHRISTOPHER LAKE NEAR CHRISTOPHER LAKE	SDOE	8L			REGINA
17.	05MC004	CONJURING CREEK NEAR PREECEVILLE	WSC	8Q			REGINA
18.	05KC002	CONNELL CREEK NEAR CONNELL CREEK	WSC	8Q			PRINCE ALBERT
19.	06AE002	COWAN LAKE NEAR HONEYMOON POINT	SDOE	8L			REGINA
20.	05FF003	CUTKNIFE CREEK NEAR CUTKNIFE	WSC	8Q			PRINCE ALBERT
21.	05JJ008	DELLWOOD RESERVOIR AT PUMP STATION	SDOE	8L			REGINA
22.	05KB011	DOGHIDE RIVER NEAR RUNCIMAN	WSC	8Q			PRINCE ALBERT
23.	05LA003	DUCK CREEK NEAR KELVINGTON	WSC	8Q			PRINCE ALBERT

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SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
PROVINCIAL

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
24.	05GC002	EAGLE CREEK NEAR ANGLIA	WSC	8Q			REGINA
25.	11AE014	EAST POPLAR RIVER ABOVE COOKSON RESERVOIR	WSC	8Q			REGINA
26.	05GG008	EMMA LAKE NEAR TWEEDSMUIR	SDOE	8L			REGINA
27.	05EF006	ENGLISHMAN RIVER NEAR SPRUCE LAKE	WSC	8Q			PRINCE ALBERT
28.	05MB013	FISHING LAKE NEAR WADENA	SDOE	8L			REGINA
29.	05JC007	FLOWING WELL WEST INFLOW NEAR FLOWING WELL	WSC	8Q			REGINA
30.	11AE015	GIRARD CREEK NEAR CORONACH	WSC	8Q			REGINA
31.	05MB010	GOOD SPIRIT LAKE NEAR CANORA	SDOE	8L			REGINA
32.	05LB011	GREENWATER LAKE NEAR CHELAN	SDOE	8L			REGINA
33.	05JF014	HUNTER CREEK NEAR RICHARDSON	WSC	8Q			REGINA
34.	05HG021	INVERNESS CREEK NEAR BRODERICK	WSC	8Q			REGINA
35.	05EG003	JACKFISH LAKE NEAR COCHIN	WSC	8L			PRINCE ALBERT
36.	05EG007	JACKFISH RIVER NEAR PRINCE	WSC	8Q			PRINCE ALBERT
37.	05KE007	KELSEY CREEK NEAR GARRICK	WSC	8Q			PRINCE ALBERT
38.	05ND009	KENOSEE LAKE NEAR CARLYLE	WSC	8L			REGINA
39.	05LA007	KIPABISKAU LAKE NEAR MCKAGUE	SDOE	8L			REGINA
40.	05HD028	LAC PELLETIER NEAR VESPER	SDOE	8L			REGINA
41.	05HC004	LAKE DIEFENBAKER AT SASKATCHEWAN LANDING	WSC	8L			REGINA
42.	05JJ010	LANIGAN CREEK NEAR LANIGAN	WSC	8Q			REGINA
43.	05MB012	LAWRIE CREEK NEAR INSINGER	WSC	8Q			REGINA
44.	05KB008	LITTLE BRIDGE CREEK NEAR ARMLEY	WSC	8Q			PRINCE ALBERT
45.	05JJ001	LITTLE MANITOU LAKE AT MANITOU BEACH	SDOE	8L			REGINA
46.	05MA002	LITTLE QUILL LAKE NEAR WYNYARD	SDOE	8L			REGINA

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SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
PROVINCIAL

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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
47.	05LB008	MACNAB CREEK NEAR SOMME	WSC	8Q			PRINCE ALBERT
48.	05LE012	MADGE LAKE NEAR KAMSACK	SDOE	8L			REGINA
49.	06AD009	MAKWA RIVER AT OUTLET OF MAKWA LAKE	WSC	8Q			PRINCE ALBERT
50.	05GA006	MANITO LAKE NEAR MARSDEN	SDOE	8L			REGINA
51.	06AD010	MEADOW RIVER BELOW MEADOW LAKE	WSC	12Q			PRINCE ALBERT
52.	05MA023	MILLIGAN CREEK NEAR WADENA	WSC	8Q			REGINA
53.	05JE002	MOOSE JAW RIVER NEAR LANG	WSC	8Q			REGINA
54.	06AD008	MORIN CREEK NEAR MEADOW LAKE	WSC	8Q			PRINCE ALBERT
55.	05GB004	MUDDY LAKE INFLOW NEAR REVENUE	WSC	8Q			PRINCE ALBERT
56.	06CB003	NEMEIBEN LAKE NEAR LA RONGE	SDOE	8L			REGINA
57.	06AE001	NORBURY CREEK NEAR SPIRITWOOD	WSC	8Q			PRINCE ALBERT
58.	05GC007	OPUNTIA LAKE WEST INFLOW	WSC	8Q			REGINA
59.	05LD003	OVERFLOWING RIVER NEAR HUDSON BAY	WSC	8Q			PRINCE ALBERT
60.	05EG008	PAGE CREEK NEAR IFFLEY	WSC	8Q			PRINCE ALBERT
61.	05MB011	PATTEN CREEK NEAR KUROKI	WSC	8Q			REGINA
62.	05HG003	PIKE LAKE NEAR SASKATOON	SDOE	8L			REGINA
63.	05LA004	PIPESTONE CREEK NEAR ROSE VALLEY	WSC	8Q			PRINCE ALBERT
64.	05LB010	PRAIRIE RIVER NEAR PRAIRIE RIVER	WSC	8Q			PRINCE ALBERT
65.	05GE001	RADOUGA CREEK NEAR BLAINE LAKE	WSC	8Q			PRINCE ALBERT
66.	05LA005	RED DEER RIVER NEAR ARCHERWILL	WSC	8Q			PRINCE ALBERT
67.	05MA016	ROMANCE CREEK NEAR WATSON	WSC	8Q			REGINA
68.	05JB002	RUSSELL CREEK NEAR VANGUARD	WSC	8Q			REGINA
69.	05JB006	RUSSELL CREEK RESERVOIR	WSC	8L			REGINA

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SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
PROVINCIAL

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
70.	05HG008	S.S.E.P. EAST MAIN CANAL BELOW BLACKSTRAP RESERVOIR	WSC	8Q			REGINA
71.	05HG004	S.S.E.P. EAST MAIN CANAL BELOW BRIGHTWATER RESERVOIR	WSC	8Q			REGINA
72.	05HG019	S.S.E.P. EAST MAIN CANAL BELOW BRODERICK RESERVOIR	WSC	8Q			REGINA
73.	05HG009	S.S.E.P. EAST MAIN CANAL BELOW ZELMA RESERVOIR	WSC	8Q			REGINA
74.	05JG001	SANDY CREEK NEAR CARON	WSC	8Q			REGINA
75.	05HC002	SNIPE LAKE NEAR ESTON	WSC	8L			REGINA
76.	05HC003	SNIPE LAKE NORTH INFLOW	WSC	8Q			REGINA
77.	05NB031	SOURIS RIVER NEAR BECHARD	WSC	8Q			REGINA
78.	05NB025	SOURIS RIVER NEAR LEWVAN	WSC	8Q			REGINA
79.	05NB030	SOURIS RIVER NEAR MCTAGGART	WSC	8Q			REGINA
80.	05HF004	SOUTH SASKATCHEWAN RIVER BELOW GARDINER DAM	WSC	12L			REGINA
81.	05KD004	TOBIN LAKE AT SQUAW RAPIDS SPILLWAY	SDOE	12L			REGINA
82.	05EG009	TURTLE LAKE NEAR GLASLYN	SDOE	8L			REGINA
83.	05HF022	UNNAMED CREEK NEAR CUTBANK	WSC	8Q			REGINA
84.	05KA010	WALDSEA LAKE NEAR HUMBOLDT	SDOE	8L			REGINA
85.	06AF007	WATERHEN LAKE NEAR DORINTOSH	SDOE	8L			REGINA
86.	05ND008	WHITE BEAR (CARLYLE) LAKE NEAR CARLYLE	WSC	8L			REGINA
87.	05JE008	WILCOX MAIN DITCH NEAR WILCOX	WSC	8Q			REGINA
88.	05JD005	WILLOWS COULEE RESERVOIR NEAR ASSINIBOIA	WSC	8L			REGINA
89.	05JC006	WIWA CREEK NEAR ST. BOSWELLS	WSC	8Q			REGINA
90.	05JC005	WOOD RIVER DIVERSION TO CHAPLIN LAKE	WSC	8Q			REGINA
91.	05HG012	ZELMA RESERVOIR AT PUMP STATION	SDOE	8L			REGINA

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SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1982-83
PROVINCIAL
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
NORMAL ACCESS				
	8L	9	0.25	2.25
	12L	1	0.40	0.40
	8Q	53	0.75	39.75
	12Q	1	1.00	1.00
TOTAL		64		43.40
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		64		43.40

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SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
DATA CONTRIBUTED BY OTHER AGENCY

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

SCHEDULE A

APR 01 1982

SASKATCHEWAN WATER QUANTITY STATIONS
1982-83
DATA CONTRIBUTED BY SASKATCHEWAN

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

SASKATCHEWAN WATER QUANTITY NETWORK
STATIONS OPERATED BY WATER SURVEY OF CANADA
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1982-83

CLASSIFICATION	TYPE	NO. OF STATIONS	CONVERSION	UNITS
FEDERAL				
REMOTE ACCESS	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	13	1.00	13.00
		16		14.20
NORMAL ACCESS	8L	8	0.25	2.00
	12L	10	0.40	4.00
	8Q	18	0.75	13.50
	12Q	23	1.00	23.00
		59		42.50
INTERNATIONAL	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	37	0.75	27.75
	12Q	8	1.00	8.00
		64		41.10
TOTAL		139		97.80
FEDERAL-PROVINCIAL				
REMOTE ACCESS	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	15	1.00	15.00
		18		16.20
NORMAL ACCESS	8L	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	86	0.75	64.50
	12Q	15	1.00	15.00
		108		82.00
TOTAL		126		98.20
PROVINCIAL				
NORMAL ACCESS	8L	9	0.25	2.25
	12L	1	0.40	0.40
	8Q	53	0.75	39.75
	12Q	1	1.00	1.00
TOTAL		64		43.40
GRAND TOTAL		329		239.40

SCHEDULE B

ANNUAL PAYMENTS - ITEMS TO BE INCLUDED

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

I OPERATIONAL COST WATER QUANTITY SURVEY STATIONS EXCLUDING SEDIMENT

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

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

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

d) Observer pay;

e) Depreciation, operation and maintenance of vehicles and boats

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

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

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

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

j) The annual cost of land leases;

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

II OPERATIONAL COST SEDIMENT STATIONS

All items in I OPERATIONAL COST plus:

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

m) Cost of analysis of sediment samples.

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

a) Salaries and overtime of construction personnel;

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

c) Depreciation, operation and maintenance of vehicles;

d) Construction materials;

e) Maintenance, depreciation and operation of construction equipment;

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

g) Land acquisition costs including legal survey costs;

h) Construction contract payments.

SCHEDULE C

PROCEDURES FOR PREPARATION OF ANNUAL PAYMENTS

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

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

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

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

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

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

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

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

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

SCHEDULE D – MEMORANDUM OF AGREEMENT

SASKATCHEWAN HYDROMETRIC SURVEYS

1982-83

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 1982-83 TO BE PAID TO CANADA BY SASKATCHEWAN

	Operation	Construction*	Total
a) Streamflow and water level installations	330 000	50 000	380 000
b) Sediment installations	–	–	–
TOTAL			380 000

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

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

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

APPENDIX IV

GUIDELINES FOR DESIGNATING FEDERAL AND PROVINCIAL RESPONSIBILITY FOR WATER QUANTITY STATIONS

August 3, 1977

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

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

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

FEDERAL STATIONS

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

1. Federal Departmental Programs

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

2. Interprovincial Rivers

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

3. International Commitments

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

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

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

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

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

e) Transboundary streams which require monitoring for management purposes.

4. Water Bodies of Navigational Importance

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

5. Nationally Funded Hydrologic Research Programs

Stations which support international and nationally funded hydrologic research programs.

6. Basin Studies

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

7. National River Inventory

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

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

FEDERAL-PROVINCIAL STATIONS

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

1. Federal-Provincial Agreements

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

2. River Basin Development

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

PROVINCIAL STATIONS

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