

CANADA - SASKATCHEWAN
MEMORANDUM OF AGREEMENT
FOR
WATER QUANTITY SURVEYS
ANNUAL REPORT 1981-82

August, 1982


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

Mr. D.A. Davis
Administrator for Canada

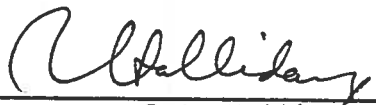
In accordance with Article XII of the Memorandum of Agreement for Water Quantity Surveys in the Province of Saskatchewan, signed February 18, 1975, we submit herewith the annual report for fiscal year 1981-82.

Saskatchewan

Canada



N.E. Parsons
Saskatchewan Environment



R.A. Halliday
Environment Canada

Members
Saskatchewan Co-ordinating Committee

August, 1982

Regina, Saskatchewan

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INTRODUCTION

Canada and Saskatchewan have cooperated 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 seventh annual report summarizes activities and program cost sharing for the fiscal year ending March 31, 1982.

The federal share of 1981/82 program costs was \$645 619; the provincial share was \$381 085. A provincial credit carryover of \$14 653 from 1980/81 and a 1981/82 payment of \$349 774 results in a provincial deficit of \$16 658 for 1981/82 operations. This deficit was primarily the result of a significant increase in vehicle operating costs as well as a large increase in unit salary costs.

SUMMARY OF ACTIVITIES

Co-ordinating Committee

Saskatchewan membership on the co-ordinating committee changed during the year with Mr. N.E. Parsons replacing Mr. R.S. Pentland. The co-ordinating committee met once during the report year on January 11, 1982. In attendance were the member for Canada, R.A. Halliday, Regional Chief, Water Survey of Canada (WSC) and the member for Saskatchewan, N.E. Parsons, Head, Intergovernmental Studies Division, Hydrology Branch, Saskatchewan Environment (SDOE). The agenda for the meeting consisted largely of routine housekeeping items related to hydrometric operations. Both agencies agreed that network expansion would be limited in 1982/83.

Decisions taken with respect to the 1982/83 hydrometric network were as follows:

- a) 05NG024 (F2) Pipestone Creek near Saskatchewan Boundary.

SDOE indicated that Saskatchewan and Manitoba, through the Prairie Provinces Water Board (PPWB) Committee on Hydrology, has requested that the PPWB designate an interprovincial monitoring station on Pipestone Creek in 1982. Because of potential losses between Moosomin Reservoir and the Manitoba boundary, SDOE would like daily data collected beginning April 1, 1982. WSC agreed to obtain miscellaneous measurements at a temporary station in Saskatchewan during 1982 or until a permanent station is constructed just downstream from the Manitoba Boundary.

- b) 06DB002 Reindeer River at Outlet of Reindeer Lake.

SDOE indicated that upgrading of this station has a high priority among a number of proposed hydrometric stations being considered by

the Saskatchewan Power Corporation (SPC) for flow forecasting in the Churchill River Basin. WSC agreed to perform the necessary reconnaissance during 1982/83.

c) Upper MacFarlane and Upper Fond du Lac.

WSC stated that the recent study on the Mackenzie River basin recommended the establishment of gauging stations in these basins. SDOE expressed an interest in a station on Fond du Lac at Outlet of Wollaston Lake but have no specific needs at this time in the Upper MacFarlane. WSC agreed to perform a reconnaissance for gauging sites in the Upper MacFarlane and Upper Fond du Lac but no stations will be constructed in 1982/83.

d) 05HC002 (P) Snipe Lake near Eston.

The recommendation that operational responsibility for this station be delegated from SDOE to WSC was accepted.

e) 05JF015 (F/P) Wascana Lake at Marina.

It was agreed that this station will replace station 05JF002 Wascana Lake below Broad Street Weir.

f) 05ND008 (P) White Bear (Carlyle) Lake near Carlyle.

The recommendation that operational responsibility for this station be delegated from SDOE to WSC was accepted.

g) 05HB001 (Contributed) Churchill Lake at Buffalo Narrows

It was agreed that records for this station will not be published in 1982 unless support information can be made available that indicates "sound" data.

Subsequent correspondence has indicated a number of additional changes to Schedule A of the Memorandum of Agreement. Operational responsibility will change from SDOE to WSC for the following provincial station:

05HDO28 Lac Pelletier near Vesper
11AE016 Fife Lake near Lisieux

In addition, twenty-one lake level stations operated by SDOE will be added to Schedule A and published by WSC provided the data meet national standards.

Finally, the recommendation that the period of operation of station 11AF005 (F3) Beaver Creek at International Boundary be reduced from annual to nine months (seasonal) was accepted by the USGS at the February 2, 1982 St. Mary-Milk Rivers Records Signing Conference.

WSC outlined the highlight activities of the current year. These included: the continuing program of installation of solar panels and deep rod bench marks; reservoir capacity field surveys at five locations in southwest Saskatchewan are nearing completion; all data from the Lake Diefenbaker surveys are now available on magnetic tape and retrieval procedures are to be documented by WSC headquarters; and, GSC datum has been extended by contract to six international gauging stations.

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

- improvements to provincial gauging stations to enhance the quality of records produced.
- co-operation concerning the installation and maintenance of data collection platforms (DCPs)
- proposed revised guidelines for designation of station responsibility.
- possible users' workshop concerning data collection, handling and dissemination by Water Resources Branch.
- guidelines for vertical control ties of hydrometric stations to Geodetic Survey of Canada datum, especially for new construction but also for existing lake level and Flood Damage Reduction Program stations.

Surface Water Conditions

For the second consecutive year, with the exception of the Saskatchewan River system, the total annual or seasonal discharges recorded at hydrometric stations throughout the province were substantially below the historic mean. This was a reflection of below normal snow cover and frequent melting periods during the winter of 1980/81 followed by a period of low rainfall during the spring and early summer. The low precipitation and runoff again created problems related to agriculture, municipal water supplies and forest fires. For WSC, the below normal surface water supplies required careful monitoring in international basins.

Network Construction and Development

With no network expansion or upgrading of stations scheduled during the report period, the construction program consisted entirely of maintenance activities designed to improve record quality and reduce the associated effort and cost. Maintenance was carried out at 68 sites with 9 of these stations undergoing extensive maintenance. In addition, three special projects, involving extensive maintenance to crew cabins and a storage shed, were also completed.

The program this year concentrated on the installation of low/medium control structures with 18 of these structures being completed. The ongoing program of installation of rod-type bench marks continued this year as did the safety program of improvements to field installations. The incidence of vandalism was not as pronounced this year with only two shelters as well as minor shelter components and cable cars requiring replacement. Electrical service has now been provided to all stations where feasible.

Three experimental projects were completed successfully during the construction season. These included a large reinforced concrete wading section/ford,

a small reinforced concrete control built in the upstream lip of a large multi-plate culvert, and a 13.7 m long steel metering bridge.

In summary, the following projects were completed at 71 sites during the construction year:

Stilling wells	9
Controls	18
Cableways	2
Electrical service	4
Other maintenance	40
Special projects	<u>3</u>
Total Projects	76

It should be noted that "maintenance" is a broad category and may vary from jobs lasting a few hours to those taking a week or longer. Construction expenditures were \$95 107 (federal) and \$43 433 (provincial) for a total of \$138 540. The construction program is detailed in the 1981/82 annual report dated April 1982.

Operations

With below normal runoff, hydrometric field surveys were relatively routine. While low flows created few field problems, the incidence of beaver activity made computations more difficult at many stations. Data computation required careful interpretation based on an intensive flow metering program in order to produce quality data. Additional monitoring of flows was required in many basins as much of the spring runoff occurred in February and March, 1981.

Six data collection platforms (DCPs) were purchased on behalf of Saskatchewan during the year. There are now 11 platforms available for use in the province with eight being operational at the time of writing. Two DCPs were installed in the Souris River Basin prior to the 1982 freshet and have since been relocated to lakes in the Qu'Appelle system. The remaining platforms are to be field installed in 1982 when additional staff will have received the

training required to install, program, operate and interrogate these instruments.

Hydrometric field staff equipped twelve stations with solar panels and rechargeable batteries. This program is essentially complete for southern installations but will continue for northern stations. Only minor problems have been encountered to date. In general, the program has substantially reduced annual battery costs.

The hydrometric program was fully staffed during the year. WSC Saskatchewan Region was allocated four summer students under the federal Career Oriented Student Employment Program (COSEP) and acquired the services of two term hydrometric assistants in 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 1981-82

Schedule A of the Memorandum of Agreement is reviewed by the Coordinating Committee annually. The Schedule identifies the operational and financial responsibility for stations that are active on April 1st of each year. Network changes from the preceding year (1980/81) as the result of responsibility reclassification, additions to or deletions from the active network were as follows:

Stations Reclassified

- 11AE009 Rock Creek below Horse Creek near International Boundary (F3 to Contributed)
- 05JF002 Wascana Lake below Broad Street Weir (F/P to P)

- 06BA001 Churchill Lake at Buffalo Narrows (Contributed by other agency to Contributed by Saskatchewan)
- 06DB002 Reindeer River at Outlet of Reindeer Lake (Contributed by other agency to Contributed by Saskatchewan)

Stations Added

- 05JF015 Wascana Lake at Marina (F/P)
- 11AB118 Battle Creek below Wilson Weir

Stations Discontinued

- 11AC069 Val Marie Pump No. 2 (F3)
- 11AB100 Battle Creek above Cypress Lake West Outflow Canal

In addition several stations have undergone name changes. These include:

- | | | |
|---------|-------------|-------------------------------------|
| 11AC054 | <u>from</u> | Val Marie Main Canal (F3) |
| | <u>to</u> | Newton Lake Main Canal |
| 11AC065 | <u>from</u> | Val Marie West Gravity Canal (F3) |
| | <u>to</u> | Huff Lake Gravity Canal |
| 11AC066 | <u>from</u> | Val Marie West Pumping Canal (F3) |
| | <u>to</u> | Huff Lake Pumping Canal |
| 05JJ003 | <u>from</u> | Lanigan Creek below Diversion (F/P) |
| | <u>to</u> | Lanigan Creek above Boulder Lake |
| 05NB031 | <u>from</u> | Souris River below Lewvan (P) |
| | <u>to</u> | Souris River near Bechard |
| 05HG021 | <u>from</u> | Unnamed Creek near Broderick (P) |
| | <u>to</u> | Inverness Creek near Broderick |
| 06AE001 | <u>from</u> | Unnamed Creek near Spiritwood (P) |
| | <u>to</u> | Norbury Creek near Spiritwood |
| 05HB002 | <u>from</u> | Coulee near Fox Valley (F/P) |
| | <u>to</u> | Happyland Creek near Fox Valley |
| 05JG015 | <u>from</u> | Coulee near Toxford (F/P) |
| | <u>to</u> | Knox Coulee near Tuxford |

The historical development of the Saskatchewan hydrometric network and the annual increase in the data base are shown in Figures 1 and 2. These figures illustrate the rapid increase in the availability of hydrometric data since the 1950's and the relative stability of the network during the last few years. Network changes as of April 1, 1981 are indicated in Figure 3. A

summary of 1981/82 station changes and a comparison with 1975/76 station data are presented in Appendix II.

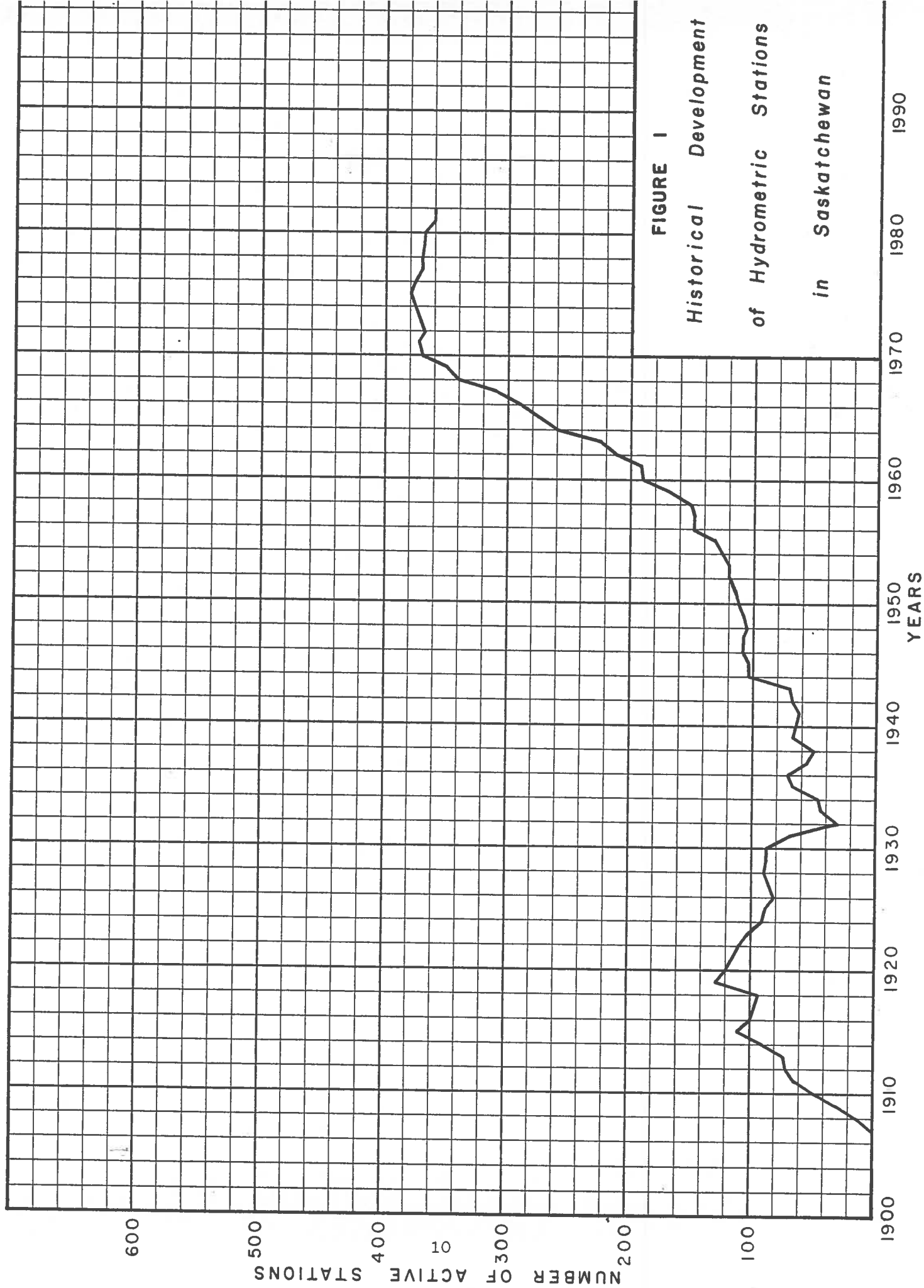


FIGURE 1

Historical Development
of Hydrometric Stations
in Saskatchewan

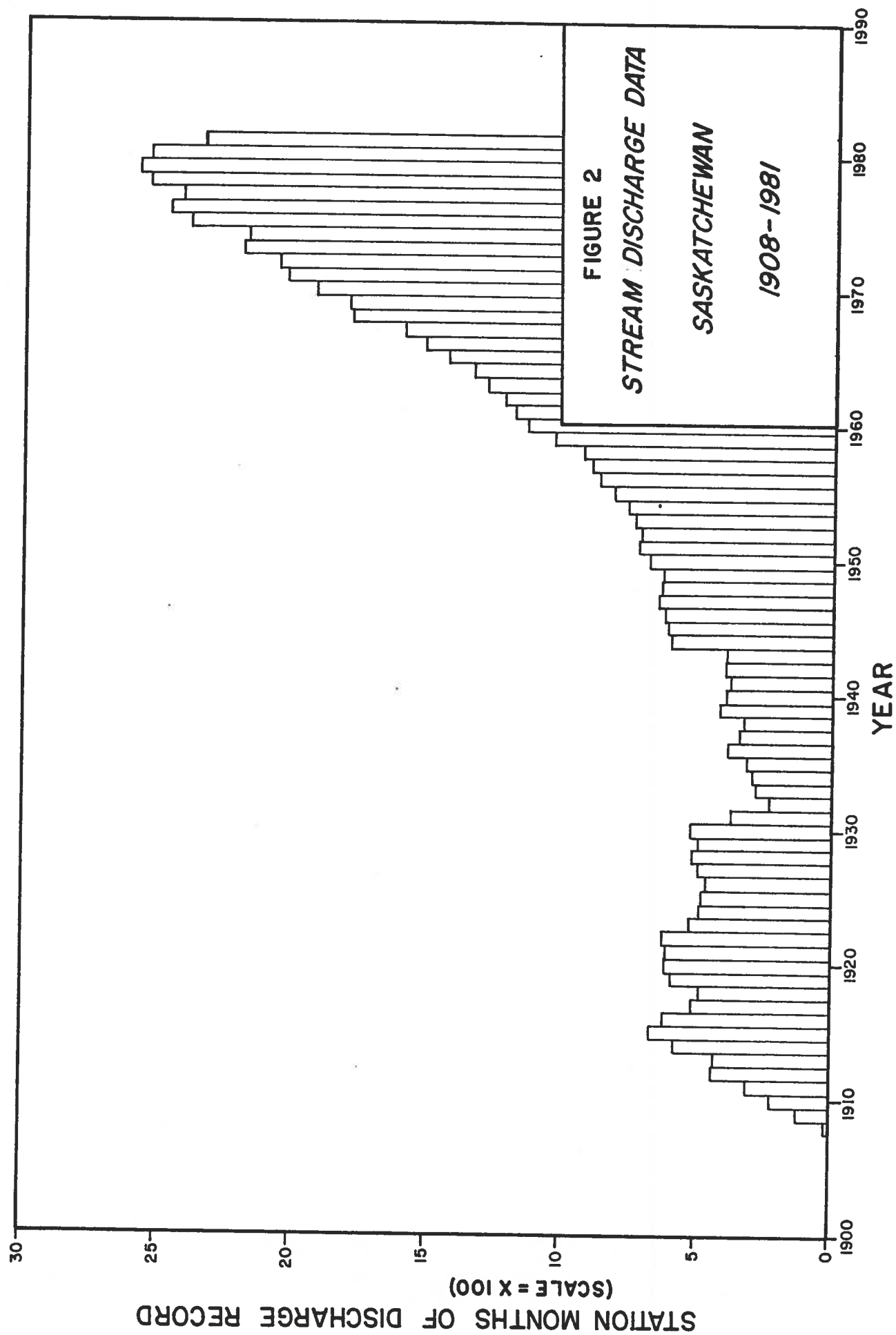
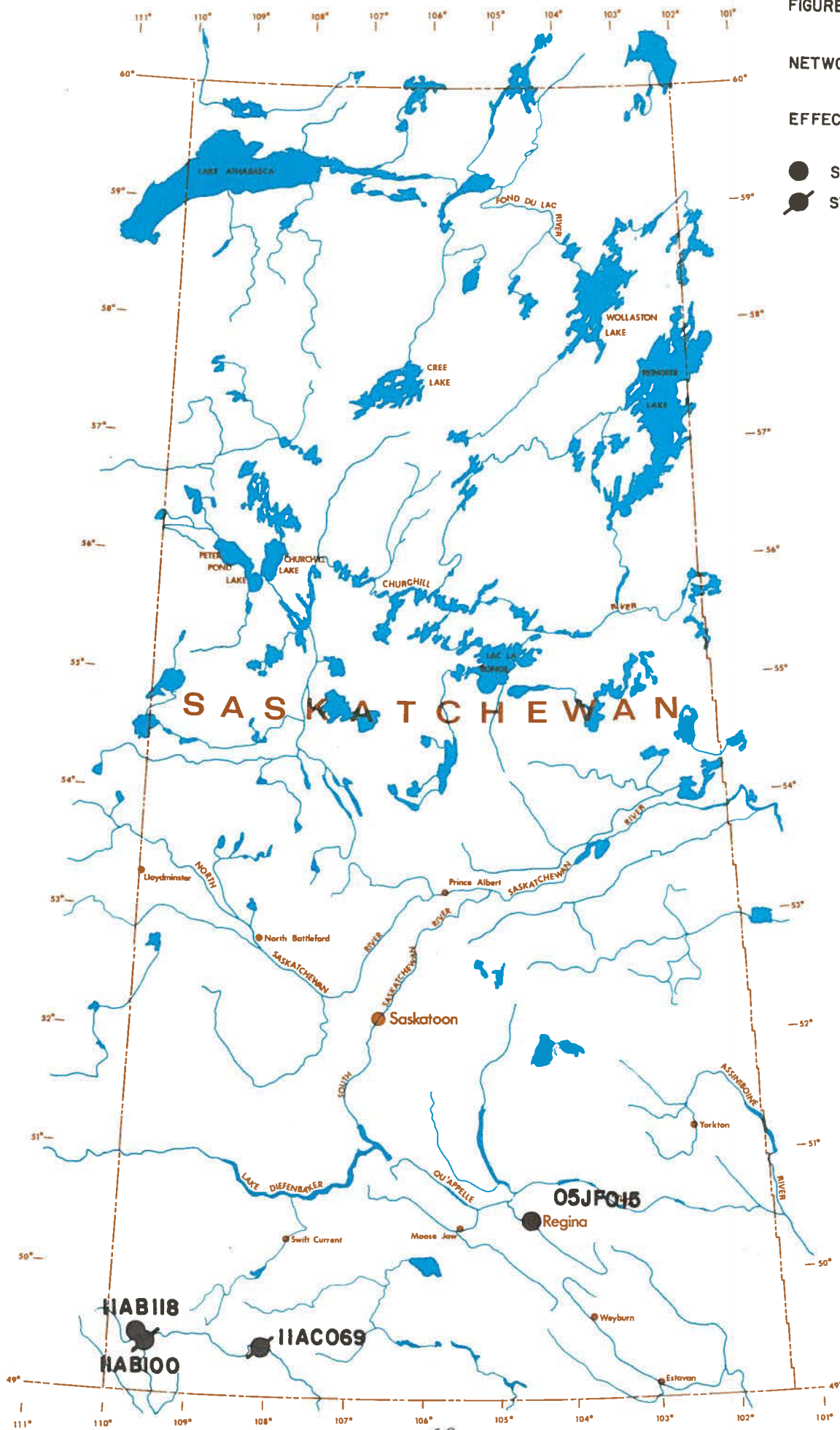


FIGURE 3

NETWORK CHANGES

EFFECTIVE APRIL 1, 1981

- STATIONS ADDED
- ⊗ STATIONS DELETED



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, 1981. 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 WSC offices within the Western and 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 23% over the previous year due to the increase in person-years allocated to hydrometric activities, retroactive salary increases, and a small reduction in the total station units. Overtime costs dropped considerably from 1980-81.

Unit operational costs for normal access hydrometric stations increased from \$647 in 1980-81 to \$895 this year. The large increase (54%) in vehicle operating costs is attributed primarily to a 45% increase in cost per

kilometre as well as to a small increase in distance travelled. In addition, significant increases in purchased services and purchased goods other than capital contributed to the higher unit operational costs for normal access stations.

In contrast, unit operational costs for remote access hydrometric stations decreased from \$3966 in 1980-81 to \$3625 this year. This decrease results from a large reduction in the remote/normal access operating cost ratio which in turn reflects higher general operating costs for normal access stations. A contributing factor was the slight reduction in air charter costs as the number of charter days was reduced in 1981-82 and no fuel resupply trip was scheduled.

Unit capital depreciation costs increased from \$169 in 1980-81 to \$209 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. A contributing factor was also the slight decrease in total station units. 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. The fact that overall costs have increased 98% during this period continues to be of major concern. It is probable that, in the short term at least, costs may continue to escalate significantly but it is hoped that judicious deployment of resources may offer some limited relief.

TABLE 1
SASKATCHEWAN WATER QUANTITY PROGRAM
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1981-1982

CLASSIFICATION	TYPE*	NO. OF STATIONS**	CONVERSION	UNITS
<u>Federal</u>				
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
		<u>16</u>		<u>14.20</u>
Normal Access	8L	8	0.25	2.00
	12L	10	0.40	4.00
	8Q	18	0.75	13.50
	12Q	24	1.00	24.00
		<u>60</u>		<u>43.50</u>
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
		<u>64</u>		<u>41.10</u>
Total		140		98.80
<u>Federal-Provincial</u>				
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
		<u>18</u>		<u>16.20</u>
Normal Access	8L	2	0.25	0.50
	12L	4	0.40	1.60
	8Q	86	0.75	64.50
	12Q	15	1.00	15.00
		<u>107</u>		<u>81.60</u>
Total		125		97.80
<u>Provincial</u>				
Normal Access	8L	7	0.25	1.75
	12L	1	0.40	0.40
	8Q	53	0.75	39.75
	12Q	1	1.00	1.00
		<u>1</u>		<u>1.00</u>
Total		62		42.90
Grand Total		327		239.50

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

** From Schedule A

TABLE 2
SASKATCHEWAN WATER QUANTITY PROGRAM
COST SUMMARY 1981-1982

Unit Cost Summary

STATION CLASSIFICATION	UNIT	SALARY \$	OPERATIONS \$	CAPITAL \$	TOTAL \$
1. Normal Access					
- Non-International	1.0	1963	895	209	3067
- International	1.0	2748	895	209	3852
2. Remote Access	1.0	2159	3625	209	5993

Total Cost Summary

STATION CLASSIFICATION	NO. OF STATIONS	UNITS	SALARY \$	OPERATIONS \$	CAPITAL \$	TOTAL \$
<u>Federal</u>						
Remote	16	14.20	30 658	51 475	2 968	85 101
Normal						
- Non-International	60	43.50	85 391	38 933	9 092	133 416
- International	64	41.10	112 943	36 785	8 590	<u>158 318</u>
						376 835
<u>Federal-Provincial</u>						
Remote	18	16.20	34 976	58 725	3 386	97 087
Normal	107	81.60	160 181	73 032	17 054	<u>250 267</u>
						347 354
<u>Provincial</u>						
Normal	<u>62</u>	<u>42.90</u>	<u>84 213</u>	<u>38 396</u>	<u>8 966</u>	<u>131 575</u>
Total	327	239.50	508 362	297 346	50 056	855 764

TABLE 3
SASKATCHEWAN WATER QUANTITY PROGRAM
SHARED COST SUMMARY 1981-1982
(From Table 2 & Construction Report)

FEDERAL SHARE	=	$\$376\ 835 + \frac{\$347\ 354}{2}$	=	\$550 512
FEDERAL CONSTRUCTION SHARE	=		=	\$ 95 107
TOTAL FEDERAL SHARE	=		=	\$645 619
PROVINCIAL SHARE	=	$\frac{\$347\ 354}{2} + \$131\ 575$	=	\$305 252
PROVINCIAL CONSTRUCTION SHARE	=		=	\$ 43 433
DCPs ACQUIRED ON BEHALF OF SASKATCHEWAN	=		=	\$ 33 600
PROVINCIAL CREDIT FOR OPERATION OF ONE F/P STATION	=		=	(\$1 200)
TOTAL PROVINCIAL SHARE	=		=	\$381 085
PROVINCIAL CREDIT (from 1980/81)	=		=	(\$14 653)
NET PROVINCIAL SHARE	=		=	\$366 432
PROVINCIAL PAYMENT 1981-82	=		=	\$349 774
PROVINCIAL DEFICIT FOR 1981-82	=		=	\$ 16 658

TABLE 4

SASKATCHEWAN WATER QUANTITY PROGRAM
HISTORICAL SUMMARY OF STATION UNIT COSTS

FISCAL YEAR	TYPE OF STATION		
	CONVENTIONAL	INTERNATIONAL	REMOTE
1975-76	<u>\$1 583</u>	<u>\$1 810</u>	<u>\$3 643</u>
	8.7%*	8.9%	8.4%
1976-77	<u>1 721</u>	<u>1 971</u>	<u>3 949</u>
	12.0%	12.6%	6.7%
1977-78	<u>1 928</u>	<u>2 220</u>	<u>4 213</u>
	9.2%	9.6%	6.8%
1978-79	<u>2 106</u>	<u>2 434</u>	<u>4 501</u>
	4.5%	14.7%	2.9%
1979-80	<u>2 200</u>	<u>2 791</u>	<u>4 631</u>
	9.8%	9.5%	27.3%
1980-81	<u>\$2 415</u>	<u>\$3 055</u>	<u>\$5 894</u>
	27.0%	26.1%	1.6%
1981-82	<u>\$3 067</u>	<u>\$3 852</u>	<u>\$5 993</u>
1975-82	93.7%	113%	64.5%

Average Percent Increase
All Stations =
Since 1975-76

90.4%

* % = $100 \times (\text{year 2} - \text{year 1}) / \text{year 1}$

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 1981/82 operating costs indicates that the cost of operating a remote hydrometric station in Saskatchewan was 4.05 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.

SASKATCHEWAN WATER QUANTITY PROGRAM
SALARY COST 1981-1982

<u>Position No.</u>	<u>Position Title</u>	<u>Salary</u>
1. 840-1265 (x0.85)	Hydrometric Technician	\$ 20 953
2. 840-1279	Hydrometric Supervisor	26 758
3. 840-1285	Hydrometric Supervisor	26 790
4. 840-1370	Hydrometric Supervisor	27 041
5. 840-1401	Hydrometric Technician	18 509
6. 840-1409 (x0.85)	Hydrometric Technician	20 370
7. 840-1413	Hydrometric Technician	20 103
8. 840-1431 (x0.25)	Sediment Lab Supervisor	6 194
9. 840-1460	Hydrometric Supervisor	26 790
10. 840-1505	Hydrometric Technician	24 036
11. 840-1506	Hydrometric Technician	24 036
12. 840-5619 (x0.10)	Data Control Supervisor	3 034
13. 840-8004	Hydrometric Technician	24 806
14. 840-8012	Hydrometric Technician	24 671
15. 840-8013 (x0.05)	Construction Supervisor	1 247
16. 840-8073	Hydrometric Technician	18 089
17. 840-8119	Hydrometric Technician	24 862
18. 840-8189 (x0.05)	International Area Engineer	1 598
19. 840-8907	Hydrometric Technician	24 129
20. 840-8913	Hydrometric Technician	23 994
21. 840-8914	Hydrometric Technician	24 324
22. 840-8915 (x0.90)	Hydrometric Technician	21 606
23. 840-8916	Hydrometric Technician	24 538
24. 840-8951	Hydrometric Supervisor	26 613
25. 840-8952 (x0.15)	Computations Technician	1 815
26. 840-9195	Hydrometric Assistant (Term)	4 187
27. 840-9245	Hydrometric Assistant (Term)	4 541
28. COSEP	Hydrometric Assistant	2 669
29. COSEP	Hydrometric Assistant	2 125
30. Overtime	All Positions	7 883
TOTAL	22.2 P-Y's	\$508 311

CALCULATION OF STATION UNIT SALARY COST

Station Units

Remote	30.40
Normal	
- Non-International	168.00
- International	41.10
TOTAL	<u>239.50</u>

Units

- Remote x1.10	33.44
- Normal, Non-International	168.00
- International x1.40	<u>57.54</u>
TOTAL	258.98

$$\text{Unit Salary Cost} = \frac{\text{Total Salary Cost}}{\text{Total Station Units}} = \frac{508\,311}{258.98} = \$1963$$

Unit Salary Cost Normal =	\$1963.00
Unit Salary Cost Remote = \$2096 x 1.10 =	\$2159.00
Unit Salary Cost International = \$2096 ₂₁ x 1.40 =	\$2748.00

TABLE 6

SASKATCHEWAN WATER QUANTITY NETWORK
 OPERATIONS COST SUMMARY 1981-1982
 (Cost Codes 1005-1006-1007)

Program Travel	\$ 48 484
Transportation of Material	\$ 1 149
Communications	\$ 9 974
Professional Services	\$ 3 717
Purchased Services	\$ 41 326
Purchased Goods (other than capital)	\$ 31 074
Equipment Acquisition	\$ 5 631
Equipment Parts & Tools	\$ 14 452
Purchased Repairs (other than vehicles)	\$ 8 466
Rentals	<u>\$ 92 010</u>
	\$256 283
Vehicle Operating Costs (Fleet Management System)	<u>\$ 40 932</u>
Total Operating Costs	\$297 215
Station Units - Normal	209.10
- Remote = 30.4 x 4.05	<u>123.12</u>
	332.22
Unit Cost - Normal = $\frac{\$297\ 215}{332.22}$ =	\$ 895
- Remote = \$895 x 4.05 =	\$ 3 625

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1981 - 1982

Line Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	050	CAPITAL
Travel - Program															
- Meals & Accommodation	64366	0501	6132	378	140	29365	6160	5038	549	15417	108	44	779	256	
- Transportation	12534	0502	8607	2134		482	371		602	106			226	6	
- Other	10179	0503	801	117	16	4580	912	858	102	2673	11	6	70	33	
Travel - Conference															
- Meals & Accommodation	390	0511	94			248									
- Transportation	50	0512	26			24								48	
- Other	38	0513	11			22								5	
Travel - Non Program															
- Transportation	668	0522	668												
Travel Out-Canada Program															
- Meals & Accommodation	952	0541	309					418	225						
- Other	196	0543	116					6	74						
Travel Out-Canada Conference															
- Meals & Accommodation	559	0551	102					312					145		
- Transportation	28	0552						5					23		
- Other	210	0553	32					105					73		
Transportation - Material															
- Air	504	1001	168	28		59	249								
- Rail	960	1002	125	670		130	3	3					29		
- Uncrated	452	1004	244			11		33					25		
- Truck	1837	1005	743	780		180	66							139	
- Bus	291	1006	38	11		142	7				5			68	
- Road & Bridge Tolls	10	1011				10								88	
- Parcel Post	305	1017	42	1		186		70	5					1	

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1981 - 1982

Line Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	050	CAPITAL
Communications															
- Centrex	3968	1019	3968												
- Commercial Service	298	1025				29		14		163		92			
- Long Distance	5054	1026	1525	143		2521	18	385					273		189
- Fixed Rental	11352	1031	8027			1815	158	877		219					256
- Telex Charge	448	1032	448												
- Telex with Reverse	3744	1046				1500	1500	744							
- Courier Service	904	1052	470			413									21
Publications															
- Exhibits & Displays	122	1059								122					
- Publishing	695	1062	645	17											33
Professional Services															
- Gauge Attendants	3939	1074		222		1350	480	1887							
- Engineering Services	290	1079													290
Educational Services															
- PSC Training	1195	1085	1195												
- Post Secondary	140	1087	140												
- University	91	1089	91												
- Teachers & Instruction	65	1091	65												
- Other	152	1093	152												
Purchased Services															
- Brokerage Fees	2889	1104	2889												
- Electricity	22906	1105	142			20312	1432	1020							
- Water & Sewage	82	1106					82								
- Other Utility Services	141	1107						141							
- Laundry	281	1108	20	97		108	19								37
- Data Processing	26844	1111	508	1317	14	11841	2145	2905				1310	6804		
- Processed Film Strip	320	1114	320												
- Photo Services	518	1115		6		211	12	4		30	35		24		196
- Building Cleaning	1260	1117	1260												
- Refuse Collection	92	1121	92												

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1981 - 1982

Line Object Name	Total	L line Object	001	003	004	005	006	007	008	010	012	016	017	050	CAPITAL
- Snow Removal	255	1122	255												
- Typing Services	1108	1123	1108												
- Contract Employees	539	1124	539												
- Electronic Media	1050	1126				1010		40							
- SSC Service Charges	7009	1132	6807	111		28	16					5	38	3	1
- Library Binding	11	1134										11			
- Conferences	35	1135	20										15		
- Temporary Help	2298	1144		1926	372										
- Non Prof Personal Service	150	1146		150											
- Membership Fees	52	1136	50												2
- Miscellaneous	4633	1140	480										4153		
Purchased Goods															
- Food	377	2013					377								
- Scrap Metal	1562	2024	32	20		817	49			445			9		190
- Non Metallic Minerals	6062	2026				450	11								5601
- Rubber & Plastic	1961	2030	22			1238		4		193					504
- Lumber	1503	2031		40		284	211	60		22			2		884
- Paper & Paper Board	282	2032		232		8				42					
- Textiles	277	2034				157	83	37							
- Gases & Demurrage	3482	2035				739	2240	442		31					30
- Other Chemicals	982	2036	18			908	31			3					22
- Lubricants	4456	2037	2935			81	1436			4					
- Heating Supplies	161	2038	8			40	105	8							
- Motor Fuel	39577	2039	39489			24	36			12			16		
- Aviation Fuel	28	2040					28								
- Basic Metal Products	25669	2041	1648	760		9518	657	212		4668					8206
- Non Metallic Products	12	2042				6								6	
- Clothing	1882	2043				1817	8								57
- Cleaning Supplies	403	2045	51	220		94	22	1		5					10
- Hand Tools	3917	2047	168	1		3288	104	51		57					248

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1981 - 1982

Line	Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	050	CAPITAL
-	Medical Supplies	13	2050	4	.		9									
-	Preprinted Forms	1727	2051	915			37						128	647		
-	Custom Forms	1375	2052	213	71		776							315		
-	Library Stock	357	2053	277							2		78			
-	Subscriptions	131	2054	118			5		8							
-	Other Printing	3112	2055	1609			262	28			11	5	160	921	116	
-	Computer Supplies	1010	2057											1010		
-	Office Supplies	6821	2058	5654	224		759	20	2					48	114	
-	Photographic Supplies	372	2062	8	10		33	20	14		235		23		29	
-	Containers	1948	2064		946		56								946	
-	Finished Products	318	2066				155	12	11		140					
-	Laboratory Glassware	7558	2067	2710	4638		210									
-	Electrical Supplies	3501	2068	196	18		2636	103	10		45				493	
-	Other Fabricated Material	6326	2069		1774		43				5				4504	
-	Photo Copy Supplies	55	2070	55												
-	Propane	183	2071				177	6								
-	Equipment Acquisition															
-	Electrical Generators	680	2101				680									
-	General Industrial Machines	4679	2102	223			1896	715							1845	
-	Conveying	3527	2103		93		243								3185	
-	Special Machine	330	2104				330									
-	Vehicles	66005	2108												66005	
-	Other Vehicles	2232	2110	48											2184	
-	Power Tools	2571	2118								406				2165	
-	Radios	310	2120				114								196	
-	Heating & Refrigeration	106	2125				106									
-	Electrical Equipment	539	2127				134	38	38						329	
-	Electrical Appliance	424	2128												424	
-	Measuring	5707	2130				56								5602	
-	Safety Equipment	1185	2133	111			1074							49		
-	Furniture	3744	2135												3744	

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1981 - 1982

Line Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	050	CAPITAL
- Boats	1308	2140													1308
- Computing Equipment	11620	2148													11620
- Other	46554	2149													46554
- Word Processing Equipment	1015	2152													1015
- Office Equipment	919	2157													919
- Recreation Equipment	432	2161	225			207									919
Equipment Parts & Tools															
- Generators	4838	2501				90				2159					2589
- General Purpose	522	2502	2			466	10			42					2
- Conveying	582	2503				582									
- Special Machines	211	2504													
- Motor Vehicle Parts	5088	2507	4157			801									211
- Other Vehicle Parts	53	2508				53									130
- Misc Vehicle Parts	2084	2515	222			1862									
- Vehicle Tires	7359	2516	7006			353									
- Plumbing Supplies	811	2517				5				356					
- Radio Equipment	408	2520				250									450
- Cooking Equipment	10	2526				10									158
- Solar Cells	771	2527	574			197									
- Electrical	61	2528				61									
- Measuring & Controlling	8914	2530	286			8218	273	137							
- Safety Equipment	891	2533				706	185								
- Marine Parts	37	2540				26	11								
- Office Equipment	25	2557				25									
- Drafting Equipment	29	2560				29									
- Recreational	72	2561	31			9	32								
- Other	66	2562				61				5					
Purchased Repairs															
- Portable Generators	1681	3001	166			1305									210
- Industrial Machines	3416	3002	25			2865	10			127			1		388
- Material Handling Equipment	69	3003				69									

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1981 - 1982

Line Object Name	Total	Line Object	001	003	004	005	006	007	008	010	012	016	017	050	CAPITAL
- Special Industrial Machines	104	3004		31		5	6								62
- Vehicles	3285	3008	3189		74			22							
- Trucks	6355	3009	4288			480	12			5					
- Miscellaneous Vehicles	600	3015			600										1570
- Radio	942	3020			747	195									
- Other Communication Repairs	139	3021			139										
- Heating & Refrigeration	110	3025			110										
- Electrical Distribution	210	3027													
- Electrical Equipment	713	3028	78	255											210
- Measuring Equipment	1800	3030			1800										360
- Safety Equipment	42	3033	15		27										
- Computer Equipment	58	3048													
Telecom	45	3050	45										58		
- Word Processing Equipment	569	3052	569												
- Office Machines	172	3056	74												
Rentals												98			
- Open Space	423	3503	249			132	18	7	12						
- Commercial Buildings	535	3505	490									4	1		
- Ships & Boats	56	3509											45		
- Aircraft	98113	3511				56									
- Vehicles	682	3513			743	88616			2005		225			6524	
- Other Vehicles	780	3514			572								110		
- Word Processing Equipment	325	3518	90	235		100								680	
- Photo Copier	3521	3520	3398				9								
- Office Equipment	183	3521	183			114									
- Construction Equipment	9958	3522	15		30	30	40			5					
- Industrial Equipment	21	3524				21									9838
- Other Equipment	534	3525	434			100									
- Other Rentals	1507	3531	55			1437		15							

TABLE 7
SASKATCHEWAN WATER QUANTITY PROGRAM
COST ACTIVITY SUMMARY
1981 - 1982

[illegible]

TABLE 8

VEHICLE OPERATING COSTS F.M.I.S. DATA 1981 - 1982

FLEET NO	General 001		Sediment Field 004		Hydro. Normal 005		Hydro. Remote 006		Hydro. Int'l 007		Construction 010		Water Quality 050		TOTAL
	KM	COST	KM	COST	KM	COST	KM	COST	KM	COST	KM	COST	KM	COST	
75-001					730	42								.058	730 42
76-044			3404	271										.080	3404 271
76-045					3327	385								.116	3327 385
76-048					14502	2223								.153	14502 2223
77-002							8787	829						.094	8787 829
77-003					18021	1897								.105	18021 1897
77-035					5089	322								.063	5089 322
77-036					10822	938			1225	106				.087	12047 1044
77-296											5089	326		.064	5089 326
77-297					19901	1700								.085	19901 1700
78-009									19465	1799				.092	19465 1799
78-047											24976	5729		.229	24976 5729
78-067											10904	4597		.422	10904 4597
78-339											35240	2830		.080	35240 2830
78-340					15305	1595								.104	15305 1595
78-341					18310	2358								.129	18310 2358
79-192					28159	3440								.122	28159 3440
79-193									26599	3296				.124	26599 3296
79-213					25610	4018								.157	25610 4018
79-462					17359	1189								.068	17359 1189
80-102					20928	1298								.062	20928 1298
80-103					12625	2061								.163	12625 2061
80-104					24122	2754								.114	24122 2754
80-105					8000	938			9322	1092				.117	17322 2030
80-106									24346	2307		3000	284	.095	27346 2591
81-044					16100	1708			1456	154				.106	17556 1862
81-045											27135	1599		.059	27135 1599
81-046					10786	1061								.098	10786 1061
81-047					20602	1422								.069	20602 1422
81-048	12708	761												.060	12708 761
TOTAL	12708	761	3404	271	290298	31349	8787	829	82413	8754	103344	15081	3000	284	503954 57329

TABLE 9

SASKATCHEWAN WATER QUANTITY PROGRAM
CAPITAL DEPRECIATION COSTS 1981 - 1982

1. VEHICLE DEPRECIATION - FMIS* DATA			\$24 496
2. EQUIPMENT DEPRECIATION**			
- Field Equipment	\$ 81 373		
- Marine Equipment	\$ 18 471		
- Scientific Equipment	\$ 83 445		
- Transportation Equipment	\$ 14 087		
- Shop & Construction Equipment	\$ 49 628		
- Accountable Items	\$ 52 087		
Total Inventory Value March 31, 1982	\$299 091		
Total Inventory Value March 31, 1981	\$210 093		
Average Inventory Value For 1981-82	\$254 592		
Capital Depreciation of Equipment @ 10%	$\frac{\$254\ 592}{10}$	=	\$25 459
3. TOTAL CAPITAL DEPRECIATION			\$49 955
4. UNIT CAPITAL DEPRECIATION			
= $\frac{\text{Total Capital Depreciation}}{\text{Total Station Units}}$ =	$\frac{\$ 49\ 955}{239.50}$	=	\$ 209

* Fleet Management Information System

** Departmental Equipment-In-Use Material Management System

TABLE 10

VEHICLE DEPRECIATION
SASKATCHEWAN FY 1981-82

Vehicle Number	Original Capital Cost \$	Depr. per month \$	Time in use Months	Annual Depr. \$	Remarks
<u>Station Wagons - Lifetime 5 years (60 months)</u>					
76-044	\$ 4 812	80	1	80	CADC - May 82
76-045	4 812	80	1	80	CADC - May 82
77-002	5 594	93	12	1 116	
77-003	5 310	81	12	972	
77-035	5 326	89	1	89	CADC
77-296	5 242	87	1	87	CADC - Const.
77-297	5 242	87	12	1 044	
78-339	5 653	94	12	1 128	Const.
78-340	5 653	94	12	1 128	
79-462	6 806	113	12	1 356	
81-045	7 874	131	11	1 441	Construction Acquired Apr./82
81-046	7 874	131	11	1 441	"
81-047	7 874	131	11	1 441	"
81-048	7 874	131	1	131	Office Car

Multi-Purpose Vehicles or Trucks - Lifetime 6 years (72 Months)

75-001	\$ 5 342	74	3	222	CADC - Aug/82
76-048	6 438	89	12	1 068	
77-036	5 176	72	12	864	
78-009	4 664	65	12	780	
78-047	7 020	98	12	1 176	Construction
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	618	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	

Actual replacement cost of Saskatchewan Vehicles in 1981/82 was \$41 415

Field surveys Vehicles Depreciation (excluding Construction Vehicles) \$24 496

Construction Vehicles Depreciation = \$7 192 (Charged to individual projects)

Total Depreciation = \$31 688

APPENDIX II

STATION AND COST SUMMARY DATA
FOR INCLUSION IN NATIONAL ANNUAL REPORT

Province: SASKATCHEWAN

TABLE 1
WATER QUANTITY SURVEYS
GAUGING STATION DATA FOR 1981-82

No. of Stations		Changes during <u>1981-82</u>		Stn. Designation April 1, <u>1981</u>			
April 1/ <u>80</u>	April 1/ <u>81</u>	Change	Added	Discontinued	Fed.	F/P	Prov.
360	359	-1	2	2	0	140	92
						127	11

*Bracket Sediment Stations

TABLE 2
WATER QUANTITY SURVEYS
COMPARATIVE GAUGING STATION DATA April 1/75 - APRIL 1, 1981

Federal Stations			F/P Stations			Provincial Stations			Total Stations		
Apr 1/75	Apr 1/ <u>81</u>	Chge	Apr 1/75	Apr 1/ <u>81</u>	Chge	Apr 1/75	Apr 1/ <u>81</u>	Chge	Apr 1/75	Apr 1/ <u>81</u>	Chge
173	140	-33	106	127	+21	51	92	+41	330	359	+29

TABLE 3
WATER QUANTITY SURVEYS
DETAILED GAUGING STATION DATA 1981-82

F-1	F-2	F-3	F-4	F-5	F-6	F-7	Total F	F/P	P	Contributed	Total-All
11	(1) 45	64	1	0	0	19	140	127	92	11	370

Bracket Sediment Stations in all categories.

Province: SASKATCHEWAN

TABLE 4
WATER QUANTITY SURVEYS
TOTAL PROGRAM COSTS & SHAREABLE COSTS FOR 1981-82
(x \$1000)

Total Program Costs					Shareable Costs						
P/Yrs	Sal.	Oper.	Cap.	Total	P/Yrs	Sal.	Oper.	Const.	Total	F Share	P Share
37.5	977.0	542.6	181.9	1701.5	22.20	542.8	381.0	138.5	1062.3	667.7	394.6

TABLE 5
WATER QUANTITY SURVEYS
SUMMARY OF SCHEDULES D/F- 1981-82

Streamflow & Water Level		Sediment		Total
Operation	Construction	Operation	Construction	
277 000	25 000	0	0	302 000

TABLE 6
WATER QUANTITY SURVEYS
COMPARISON - SCHEDULED & ACTUAL COSTS FOR 1981-82
(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	
277 000	304 052	25 000	77 033*	302 000	381 085	79 085	-31 311*

* Includes \$33 600 for DCPs purchased on behalf of Saskatchewan

** Overpayment for 1980-81 = \$14 653. therefore 1981-82 Saskatchewan shortfall = \$31 311 - \$14 653 = \$16 658

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:-

INTRODUCTION

DEFINITIONS

- a) ANNUAL PAYMENT - a sum, agreed to by both parties in advance of the fiscal year, which shall represent the costs of operation and construction of water quantity survey stations.
- b) CONSTRUCTION - includes the construction of new water quantity survey stations and the maintenance, repair and reconstruction of existing water quantity survey stations.
- c) CONSTRUCTION PERSONNEL - includes foremen and labourers on full time duty as well as engineering and technical staff on part time supervisory duty or reconnaissance assignment.
- d) FIELD PERSONNEL - includes hydrometric supervisors and field technicians on full time duty as well as engineering and technical staff on temporary assignment.
- e) NETWORKS - an organized system of gauging stations for collection of water quantity survey data.
- f) OPERATING PARTY - either party to this agreement which operates water quantity survey stations.
- g) PUBLISHED DATA - includes streamflow, water level and sediment data. The data is to be available in publications and computer compatible data files.
- h) SEDIMENT STATIONS - any location where surveys are undertaken to collect data on suspended sediment or bed material or bed load data singly or in combination. Water temperature data is to be collected.
- i) WATER QUANTITY SURVEY STATIONS - any location where surveys are undertaken to collect streamflow or water level or suspended sediment or bed material or bed load data singly or in combination. Water temperature data may be collected.

ARTICLE I

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

OPERATIONAL CONSIDERATIONS

ARTICLE II

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

ARTICLE III

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

ARTICLE IV

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

ARTICLE V

- a) The operating party shall provide the staff to meet its responsibilities under this agreement.
- b) Canada will at its own expense publish data from stations that it operates. Canada will on request at its own expense, publish data from stations operated by the Province providing the data meet national standards.

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

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SASKATCHEWAN WATER QUANTITY STATIONS
1981-82
FEDERAL 1. SUPPORT NATIONAL PROGRAMS

PAGE 1

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

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA

1981-82

FEDERAL 1. SUPPORT NATIONAL PROGRAMS
UNIT SUMMARY

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

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1981-82
FEDERAL 2. INTERPROVINCIAL RIVERS

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ITEM NO.	STATION NO.	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.	05FE004 BATTLE RIVER NEAR ALBERTA BOUNDARY	WSC	12Q		PRINCE ALBERT
	6.	05FE005 BLACKFOOT CREEK NEAR ALBERTA BOUNDARY	WSC	8Q		PRINCE ALBERT
	7.	05JF006 BOGGY CREEK NEAR LUMSDEN	WSC	8Q		REGINA
	8.	05AH001 BOXELDER CREEK NEAR WALSH	WSC	8Q		CALGARY
	9.	05HF007 BRODERICK IRRIGATION CANAL BELOW PUMPING STATION	WSC	8Q		REGINA
	10.	05JG009 BUFFALO POUND LAKE AT PUMPING STATION	WSC	12L		REGINA
	11.	05KH007 CARROT RIVER NEAR TURNBERRY	WSC	12Q		WINNIPEG
	12.	06EA002 CHURCHILL RIVER AT SANDY BAY	WSC	12Q	REMOTE	PRINCE ALBERT
	13.	05JM006 CROOKED LAKE NEAR GRAYSON	WSC	12L		REGINA
	14.	05KH011 DRAGLINE CHANNEL NEAR SQUAW RAPIDS	WSC	12Q		PRINCE ALBERT
	15.	05JK005 ECHO LAKE AT FISH HATCHERY	WSC	12L		REGINA
	16.	05JM010 EKAPO CREEK NEAR MARIEVAL	WSC	8Q		REGINA
	17.	05JG006 ELBOW DIVERSION CANAL AT DROP STRUCTURE	WSC	12Q		REGINA
	18.	05JL002 INDIANHEAD CREEK NEAR INDIAN HEAD	WSC	8Q		REGINA
	19.	05JL004 KATEPWA LAKE AT KATEPWA BEACH	WSC	12L		REGINA
	20.	05HF003 LAKE DIEFENBAKER AT GARDINER DAM	WSC	12L		REGINA
	21.	05JH004 LAST MOUNTAIN LAKE AT ROWAN'S RAVINE	WSC	12L		REGINA
	22.	11AB082 LODGE CREEK AT ALBERTA BOUNDARY	WSC	8Q		REGINA
	23.	05JF013 LUMSDEN INDEX RESERVOIR	WSC	8L		REGINA

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SASKATCHEWAN WATER QUANTITY STATIONS
1981-82
FEDERAL 2. INTERPROVINCIAL RIVERS

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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC SEDIMENT	ACCESS	OPERATIONS CENTER
24.	05JE006	MOOSE JAW RIVER NEAR BURDICK	WSC	12Q	X	REGINA
25.	05GG001	NORTH SASKATCHEWAN RIVER AT PRINCE ALBERT	WSC	12Q	X	PRINCE ALBERT
26.	05EF001	NORTH SASKATCHEWAN RIVER NEAR DEER CREEK	WSC	12Q		PRINCE ALBERT
27.	05JG004	QU'APPELLE RIVER ABOVE BUFFALO POUND LAKE	WSC	12Q		REGINA
28.	05JM013	QU'APPELLE RIVER AT HYDE	WSC	8Q		REGINA
29.	05JK002	QU'APPELLE RIVER BELOW CRAVEN DAM	WSC	12Q		REGINA
30.	05JL001	QU'APPELLE RIVER BELOW KATEPWA LAKE	WSC	12Q		REGINA
31.	05JK007	QU'APPELLE RIVER BELOW LOON CREEK	WSC	12Q		REGINA
32.	05JG007	QU'APPELLE RIVER BELOW MOOSE JAW RIVER	WSC	12Q		REGINA
33.	05JF001	QU'APPELLE RIVER NEAR LUMSDEN	WSC	12Q		REGINA
34.	05JM001	QU'APPELLE RIVER NEAR WELBY	WSC	12Q		REGINA
35.	05LC001	RED DEER RIVER NEAR ERWOOD	WSC	12Q		PRINCE ALBERT
36.	05HD033	REID LAKE NEAR DUNCAIRN	WSC	12L		REGINA
37.	05JG013	RIDGE CREEK NEAR BRIDGEFORD	WSC	8Q		REGINA
38.	05JM007	ROUND LAKE NEAR WHITEWOOD	WSC	12L		REGINA
39.	05KH008	SASKATCHEWAN RIVER NEAR MANITOBA BOUNDARY	WSC	12Q	REMOTE	WINNIPEG
40.	05JH007	SILTON INDEX RESERVOIR	WSC	8L		REGINA
41.	05HG001	SOUTH SASKATCHEWAN RIVER AT SASKATOON	WSC	12Q		REGINA
42.	05HH001	SOUTH SASKATCHEWAN RIVER AT ST. LOUIS	WSC	12Q		PRINCE ALBERT
43.	05HD034	SWIFT CURRENT CANAL AT SWIFT CURRENT	WSC	8Q		REGINA
44.	05MB009	THEODORE RESERVOIR NEAR THEODORE	WSC	8L		REGINA
45.	05JF005	WASCANA CREEK NEAR LUMSDEN	WSC	12Q		REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1981-82FEDERAL 2. INTERPROVINCIAL RIVERS
UNIT SUMMARY

REMOTE ACCESS	TYPE	NO. OF STATIONS	CONVERSION	UNITS
	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	19	1.00	19.00
TOTAL		43		31.70
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		45		33.70

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SASKATCHEWAN WATER QUANTITY STATIONS
1981-82
FEDERAL 3. INTERNATIONAL COMMITMENTS

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

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SASKATCHEWAN WATER QUANTITY STATIONS
1981-82
FEDERAL 3. INTERNATIONAL COMMITMENTS

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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC 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

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SASKATCHEWAN WATER QUANTITY STATIONS
1981-82
FEDERAL 3. INTERNATIONAL COMMITMENTS

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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC 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

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SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1981-82
FEDERAL 3. INTERNATIONAL COMMITMENTS
UNIT SUMMARY

REMOTE ACCESS	TYPE	NO. OF STATIONS	CONVERSION	UNITS
TOTAL	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	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 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
				41.10
GRAND TOTAL				41.10

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SASKATCHEWAN WATER QUANTITY STATIONS
1981-82
FEDERAL 4. MAJOR NAVIGATIONAL IMPORTANCE

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ITEM STATION
NO. NUMBER

1. 07MC003 LAKE ATHABASCA NEAR CRACKINGSTONE POINT

STATION NAME

OPERATING
AGENCY

WSC

RECORD OBTAINED
HYDROMETRIC SEDIMENT

12L

ACCESS

REMOTE

OPERATIONS
CENTER

PRINCE ALBERT

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SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1981-82
FEDERAL 4. MAJOR NAVIGATIONAL IMPORTANCE
UNIT SUMMARY

REMOTE ACCESS	TYPE	NO. OF STATIONS	CONVERSION	UNITS
	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

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SASKATCHEWAN WATER QUANTITY STATIONS
1981-82
FEDERAL 7. NATIONAL STREAM INVENTORY

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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC SEDIMENT	ACCESS	OPERATIONS CENTER
1.	06CA004	BIGSTONE LAKE NEAR LA RANGE	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		PRINCE ALBERT
18.	05HD036	SWIFT CURRENT CREEK BELOW ROCK CREEK	WSC	12Q	REMOTE	PRINCE ALBERT
19.	06DA001	WOLLASTON LAKE AT ROSS CHANNEL	WSC	12L	REMOTE	PRINCE ALBERT

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SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1981-82
FEDERAL 7. NATIONAL STREAM INVENTORY
UNIT SUMMARY

PAGE 13

REMOTE ACCESS	TYPE	NO. OF STATIONS	CONVERSION	UNITS
TOTAL	8L	0	0.25	0.00
	12L	2	0.40	0.80
	8Q	0	0.75	0.00
	12Q	11	1.00	11.00
		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

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SASKATCHEWAN WATER QUANTITY STATIONS
1981-82
FEDERAL-PROVINCIAL

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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC SEDIMENT	ACCESS	OPERATIONS CENTER
1.	06AD011	ALCOTT CREEK ABOVE MEADOW LAKE	WSC	8Q		PRINCE ALBERT
2.	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 BEAVAL	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.	05HB002	COULEE NEAR FOX VALLEY	WSC	8Q		REGINA
23.	05JG015	COULEE NEAR TUXFORD	WSC	8Q		REGINA

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SASKATCHEWAN WATER QUANTITY STATIONS
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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC SEDIMENT	ACCESS	OPERATIONS CENTER
24.	05HF014	CREIGHTON TRIBUTARY NEAR TOTNES	WSC	8Q		REGINA
25.	05HH002	CROMARTY CREEK NEAR BIRCH HILLS	WSC	8Q		PRINCE ALBER
26.	05MB006	CROOKED HILL CREEK NEAR CANORA	WSC	8Q		REGINA
27.	05EG004	CRYSTAL CREEK NEAR IFFLEY	WSC	8Q		PRINCE ALBER
28.	05KH002	CUMBERLAND LAKE NEAR CUMBERLAND HOUSE	WSC	12L		PRINCE ALBER
29.	05JM015	CUTARM CREEK NEAR SPY HILL	WSC	8Q		REGINA
30.	07CD007	DESCHARME RIVER BELOW DUPRE LAKE	WSC	12Q	REMOTE	PRINCE ALBER
31.	06AG002	DORE RIVER NEAR THE MOUTH	WSC	12Q	REMOTE	PRINCE ALBER
32.	07MA003	DOUGLAS RIVER NEAR CLUFF LAKE	WSC	12Q	REMOTE	PRINCE ALBER
33.	05HI003	DUCK LAKE CREEK NEAR ROSTHERN	WSC	8Q		PRINCE ALBER
34.	05GC006	EAGLE CREEK NEAR ENVIRON	WSC	8Q		REGINA
35.	05LB002	ETOMAMI RIVER NEAR BERTWELL	WSC	8Q		PRINCE ALBERT
36.	05GA007	EYEHILL CREEK NEAR MACKLIN	WSC	8Q		PRINCE ALBERT
37.	05LB007	FIR RIVER NEAR HUDSON BAY	WSC	12Q		PRINCE ALBERT
38.	06CE001	FOSTER RIVER ABOVE CHURCHILL RIVER	WSC	12Q	REMOTE	PRINCE ALBERT
39.	05NF013	GAINSBOROUGH CREEK NEAR STORTHOAKS	WSC	8Q		REGINA
40.	05GG010	GARDEN RIVER NEAR HENRIBOURG	WSC	8Q		PRINCE ALBERT
41.	05NA005	GIBSON CREEK NEAR RADVILLE	WSC	8Q		REGINA
42.	05KA009	GOOSEHUNTING CREEK NEAR BEATTY	WSC	8Q		PRINCE ALBERT
43.	05HF016	GREENLEIGH RESERVOIR NEAR BICKLEIGH	WSC	8L		REGINA
44.	11AE010	HAY MEADOW CREEK NEAR LISIEUX	WSC	8Q		REGINA
45.	05MA012	IRONSPRING CREEK NEAR WATSON	WSC	8Q		REGINA
46.	05JG014	ISKWAO CREEK NEAR CRAIK	WSC	8Q		REGINA

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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC SEDIMENT	ACCESS	OPERATIONS CENTER
47.	05NB014	JEWEL CREEK NEAR GOODWATER	WSC	8Q		REGINA
48.	05JK004	JUMPING DEER CREEK NEAR LIPTON	WSC	8Q		REGINA
49.	06BB004	KEELEY RIVER AT OUTLET OF KEELEY LAKE	WSC	12Q	REMOTE	PRINCE ALBER
50.	06CB001	LAC LA RONGE AT LA RONGE	WSC	12L		PRINCE ALBER
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 ALBER
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 ALBER
58.	05NA004	LONG CREEK NEAR MAXIM	WSC	8Q		REGINA
59.	05HF005	MACDONALD CREEK NEAR BOUNTY	WSC	8Q		REGINA
60.	05MA021	MAGNUSON CREEK NEAR WYNYARD	WSC	8Q		REGINA
61.	06AD007	MAKWA RIVER AT RAPID VIEW	WSC	8Q		PRINCE ALBER
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 ALBER
66.	06CA005	MONTREAL LAKE NEAR MOLANOSA	WSC	12L		PRINCE ALBER
67.	06CA003	MONTREAL RIVER AT HIGHWAY NO. 2	WSC	12Q		PRINCE ALBER
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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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC 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 VANGUARD	WSC	8Q		REGINA
74.	06BC001	MUDJATIK RIVER NEAR FORCIER LAKE	WSC	12Q	REMOTE	PRINCE ALBER
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 ALBER
78.	07LE004	OTHERSIDE RIVER AT OUTLET OF MERCREDI LAKE	WSC	12Q	REMOTE	PRINCE ALBER
79.	06EA007	PAGATO RIVER AT OUTLET OF PAGATO LAKE	WSC	12Q	REMOTE	PRINCE ALBER
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 ALBER
84.	06BC002	PORTER LAKE AT CREW CABIN	WSC	12L	REMOTE	PRINCE ALBER
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		REGINA
88.	05HF013	RIDALLS TRIBUTARY BELOW GREENLEIGH RESERVOIR	WSC	8Q		PRINCE ALBER
89.	05JJ009	SALINE CREEK NEAR NOKOMIS	WSC	8Q		REGINA
90.	05KD003	SASKATCHEWAN RIVER BELOW TOBIN LAKE	WSC	12Q		REGINA
91.	05KH009	SASKATCHEWAN RIVER OLD CHANNEL	WSC	12Q		PRINCE ALBERT
92.	05LB006	SHAND CREEK NEAR DILLABOUGH	WSC	8Q		PRINCE ALBERT

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ITEM NO.	STATION NO.	STATION NAME	OPERATING AGENCY	RECORD OBTAINED	HYDROMETRIC	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				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	SDOE	12L				REGINA

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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC SEDIMENT	ACCESS	OPERATIONS CENTER
116.	07LB001	WATERBURY LAKE AT CREW CABIN	WSC	12L	REMOTE	PRINCE ALBER
117.	07LB002	WATERFOUND RIVER BELOW UNKNOWN LAKE	WSC	12Q	REMOTE	PRINCE ALBER
118.	06AF005	WATERHEN RIVER NEAR GOODS OIL	WSC	12Q		PRINCE ALBER
119.	06DC001	WATHAMAN RIVER BELOW WATHAMAN LAKE	WSC	12Q	REMOTE	PRINCE ALBER
120.	07LA003	WHEELER RIVER BELOW RUSSELL LAKE	WSC	12Q	REMOTE	PRINCE ALBER
121.	05KE005	WHITE, FOX RIVER NEAR GARRICK	WSC	8Q		PRINCE ALBER
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 ALBER
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

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SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1981-82
FEDERAL-PROVINCIAL
UNIT SUMMARY

REMOTE ACCESS	TYPE	NO. OF STATIONS	CONVERSION	UNITS
TOTAL	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	4	0.40	1.60
	8Q	86	0.75	64.50
	12Q	15	1.00	15.00
		107		81.60
TOTAL 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
		0		0.00
GRAND TOTAL		125		97.80

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ITEM STATION
NO. NUMBER

STATION NAME

OPERATING
AGENCYRECORD OBTAINED
HYDROMETRIC SEDIMENT

ACCESS

OPERATIONS
CENTER

1. 05LA006 BARRIER RIVER BELOW BARRIER LAKE
2. 05MA022 BECKETT BROOK NEAR FOAM LAKE
3. 05MA010 BIG QUILL LAKE NEAR KANDAHAR
4. 05KI014 BIRCH RIVER MARSH NEAR CUMBERLAND HOUSE
5. 05KH013 BIRCH RIVER NEAR MANITOBA BOUNDARY
6. 05KE006 BISSETT CREEK NEAR CHOICELAND
7. 05HG014 BLACKSTRAP RESERVOIR AT SOUTH SIDE OF CAUSEWAY
8. 05HG013 BRADWELL RESERVOIR AT PUMP STATION
9. 05HG020 BRIGHTWATER CREEK NEAR PROCTOR LAKE
10. 05HG006 BRIGHTWATER RESERVOIR AT RIPARIAN OUTLET
11. 05HF017 BRODERICK RESERVOIR AT WEST EMBANKMENT
12. 05JE009 BROKENSHELL CREEK NEAR TROSSACHS
13. 05KE008 CANDLE LAKE AT CANDLE LAKE
14. 05KA001 CARROT RIVER NEAR KINISTINO
15. 06AD012 CHITEK LAKE AT CHITEK VILLAGE
16. 05GG009 CHRISTOPHER LAKE NEAR CHRISTOPHER LAKE
17. 05MC004 CONJURING CREEK NEAR PREECEVILLE
18. 05KC002 CONNELL CREEK NEAR CONNELL CREEK
19. 06AE002 COWAN LAKE NEAR HONEYMOON POINT
20. 05FF003 CUTKNIFE CREEK NEAR CUTKNIFE
21. 05JJ008 DELLWOOD RESERVOIR AT PUMP STATION
22. 05KB011 DOCHIDE RIVER NEAR RUNCIMAN
23. 05LA003 DUCK CREEK NEAR KELVINGTON

WSC

8Q

PRINCE ALBERT

WSC

8Q

REGINA

SDOE

8L

REGINA

DU

12L

PRINCE ALBERT

SDOE

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REMOTE

PRINCE ALBERT

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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC 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 GHELAN	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	SDOE	8L		REGINA
42.	05JJ010	LANIGAN CREEK NEAR LANIGAN	WSC	8L		REGINA
43.	05MB012	LAWRIE CREEK NEAR INSINGER	WSC	8Q		REGINA
44.	05KB008	LITTLE BRIDGE CREEK NEAR ARMLEY	WSC	8Q		REGINA
45.	05JJ001	LITTLE MANITOU LAKE AT MANITOU BEACH	WSC	8Q		PRINCE ALBERT
46.	05MA002	LITTLE QUILL LAKE NEAR WYNYARD	SDOE	8L		REGINA

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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC SEDIMENT	ACCESS	OPERATIONS CENTER
47.	05LB008	MAGNAB CREEK NEAR SOMME	WSC	8Q		PRINCE ALBER
48.	05LE012	MADGE LAKE NEAR KAMSACK	SDOE	8L		REGINA
49.	06AD009	MAKWA RIVER AT OUTLET OF MAKWA LAKE	WSC	8Q		PRINCE ALBER
50.	05GA006	MANITO LAKE NEAR MARSDEN	SDOE	8L		REGINA
51.	06AD010	MEADOW RIVER BELOW MEADOW LAKE	WSC	12Q		PRINCE ALBER
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 ALBER
55.	05GB004	MUDDY LAKE INFLOW NEAR REVENUE	WSC	8Q		PRINCE ALBER
56.	06CB003	NEMEIBEN LAKE NEAR LA RONGE	SDOE	8L		REGINA
57.	06AE001	NORBURY CREEK NEAR SPIRITWOOD	WSC	8Q		PRINCE ALBER
58.	05GC007	OPUNTIA LAKE WEST INFLOW	WSC	8Q		REGINA
59.	05LD003	OVERFLOWING RIVER NEAR HUDSON BAY	WSC	8Q		PRINCE ALBER
60.	05EG008	PAGE CREEK NEAR IFFLEY	WSC	8Q		PRINCE ALBER
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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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC SEDIMENT	ACCESS	OPERATIONS CENTER
70.	05HC008	S.S.E.P. EAST MAIN CANAL BELOW BLACKSTRAP RESERVOIR	WSC	8Q		REGINA
71.	05HC004	S.S.E.P. EAST MAIN CANAL BELOW BRIGHTWATER RESERVOIR	WSC	8Q		REGINA
72.	05HC019	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.	05JC001	SANDY CREEK NEAR CARON	WSC	8Q		REGINA
75.	05HC002	SNIPE LAKE NEAR ESTON	SDOE	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 LEWAN	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.	05JF002	WASCANA LAKE BELOW BROAD STREET WEIR	SDOE	12L		REGINA
86.	06AF007	WATERHEN LAKE NEAR DORINTOSH	SDOE	8L		REGINA
87.	05ND008	WHITE BEAR (CARLYLE) LAKE NEAR CARLYLE	SDOE	8L		REGINA
88.	05JE008	WILCOX MAIN DITCH NEAR WILCOX	WSC	8Q		REGINA
89.	05JD005	WILLOWS COULEE RESERVOIR NEAR ASSINIBOIA	WSC	8L		REGINA
90.	05JC006	WIWA CREEK NEAR ST. BOSWELLS	WSC	8Q		REGINA
91.	05JC005	WOOD RIVER DIVERSION TO CHAPLIN LAKE	WSC	8Q		REGINA
92.	05HG012	ZELMA RESERVOIR AT PUMP STATION	SDOE	8L		REGINA

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SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1981-82
PROVINCIAL
UNIT SUMMARY

REMOTE ACCESS	TYPE	NO. OF STATIONS	CONVERSION	UNITS
TOTAL	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
		0		0.00
NORMAL ACCESS				
	8L	7	0.25	1.75
	12L	1	0.40	0.40
	8Q	53	0.75	39.75
	12Q	1	1.00	1.00
TOTAL		62		42.90
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		62		42.90

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1981-82
DATA CONTRIBUTED BY OTHER AGENCY

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ITEM STATION
NO. NUMBER

1. 11AE009 ROCK CREEK BELOW HORSE CREEK NEAR INTERNATIONAL BOUNDARY

STATION NAME

OPERATING
AGENCY

USGS

RECORD OBTAINED
HYDROMETRIC SEDIMENT

12Q

ACCESS

OPERATIONS
CENTER
HELENA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1981-82
DATA CONTRIBUTED BY SASKATCHEWAN

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ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC 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

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SASKATCHEWAN WATER QUANTITY NETWORK
STATIONS OPERATED BY WATER SURVEY OF CANADA
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1981-82

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CLASSIFICATION	TYPE	NO. OF STATIONS	CONVERSION	UNITS
FEDERAL REMOTE ACCESS	8L 12L 8Q 12Q	0 3 0 13 16	0.25 0.40 0.75 1.00	0.00 1.20 0.00 13.00 14.20
NORMAL ACCESS	8L 12L 8Q 12Q	8 10 18 24 60	0.25 0.40 0.75 1.00	2.00 4.00 13.50 24.00 43.50
INTERNATIONAL	8L 12L 8Q 12Q	15 4 37 8 64	0.25 0.40 0.75 1.00	3.75 1.60 27.75 8.00 41.10
TOTAL		140		98.80
FEDERAL-PROVINCIAL REMOTE ACCESS	8L 12L 8Q 12Q	0 3 0 15 18	0.25 0.40 0.75 1.00	0.00 1.20 0.00 15.00 16.20
NORMAL ACCESS	8L 12L 8Q 12Q	2 4 86 15 107	0.25 0.40 0.75 1.00	0.50 1.60 64.50 15.00 81.60
TOTAL		125		97.80
PROVINCIAL NORMAL ACCESS	8L 12L 8Q 12Q	7 1 53 1	0.25 0.40 0.75 1.00	1.75 0.40 39.75 1.00
TOTAL		62		42.90
GRAND TOTAL		327		239.50

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SASKATCHEWAN WATER QUANTITY NETWORK
STATIONS OPERATED BY WATER SURVEY OF CANADA
COST SUMMARY 1981-82

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UNIT COST SUMMARY					
STATION TYPE	UNIT	SALARY \$	OPERATIONS \$	CAPITAL \$	TOTAL \$
1. NORMAL ACCESS					
- NON-INTERNATIONAL	1.0	2047	0830	0234	3111
- INTERNATIONAL	1.0	2865	0830	0234	3929
2. REMOTE ACCESS	1.0	2251	6061	0234	8546

TOTAL COST SUMMARY					
STATION CLASSIFICATION	NO. OF STATIONS	UNITS	SALARY \$	OPERATIONS \$	CAPITAL \$
FEDERAL					
REMOTE	16	14.20	31 964	86 066	3 323
NORMAL					
- NON-INTERNATIONAL	60	43.50	89 045	36 105	10 179
- INTERNATIONAL	64	41.10	117 752	34 113	9 617
					418 164
FEDERAL-PROVINCIAL					
REMOTE	18	16.20	36 466	98 188	3 791
NORMAL	107	81.60	167 035	67 728	19 094
					392 302
PROVINCIAL					
NORMAL	62	42.90	87 816	35 607	10 039
TOTAL	327	239.50	530 078	357 807	56 043
					943 928

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

1981-82

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 1981-82 TO BE PAID TO CANADA BY SASKATCHEWAN

	<u>Operation</u>	<u>Construction*</u>	<u>Total</u>
a) Streamflow and water level installations	277 000	25 000	302 000
b) Sediment installations	-	-	-
TOTAL			\$302 000

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

S.R. Blackwell
S.R. Blackwell
Chief, Water Management Service
Administrator for Saskatchewan

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

APPENDIX IV

GUIDELINES FOR DESIGNATING FEDERAL AND PROVINCIAL
RESPONSIBILITY FOR WATER QUANTITY STATIONS

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.