CANADA - SASKATCHEWAN

MEMORANDUM OF AGREEMENT

FOR

WATER QUANTITY SURVEYS

ANNUAL REPORT 1991-1992

Water Resources Branch
Saskatchewan District

March, 1994

TO: Mr. W.L. Dybvig
Administrator for Saskatchewan

Mr. R.A. Halliday
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 the fiscal year 1991-92.

Saskatchewan

A. B. Banga
Saskatchewan Water Corporation

Canada

R.G. Boals
Environment Canada

Members
Saskatchewan Coordinating Committee

March, 1994

Regina, Saskatchewan

EXECUTIVE SUMMARY

The Canada-Saskatchewan Coordinating Committee met twice during the report year to discuss program activities. The items included: financial status and outlook; hydrometric and sediment program activities; hydrometric network planning; the hydrometric construction program; and, the special construction of stations to monitor the Rafferty/Alameda project.

Drought conditions carried through from 1990 to the spring of 1991 in southern areas of the province. Above normal winter snowfall in the Lake Athabasca area and heavy rainstorms in the southwestern portion of the province resulted in high flow conditions and several historic high streamflow measurements. Data computation and hydrometric field work were completed on schedule. Additional field coverage was required to cover the high flows on the North Saskatchewan, South Saskatchewan and Fond Du Lac Rivers, and in the Wood River , Frenchman River and Battle Creek Basins.

A Hydraulic and Morphologic survey was completed for the Beaver River near Dorintosh. The Hydrometric Supervisors were trained in bed material sampling methods. Additional staff training was provided in the use of standard computer software. Approximately 35 person-weeks of time were lost to a strike by members of the Public Service Alliance of Canada.

One station was deleted from the network in 1991-92. Hydrometric and sediment network planning activities continued during the year. One temporary and eight new stations were constructed during the year and maintenance an upgrading was

competed at 52 locations. Hydrometric construction expenditures during 1991-92 were $61 819 (federal) and $12 641 (provincial). A special allotment was provided to construct stations to monitor the Rafferty/Alameda project. In 1991-92, $90 363 of this allotment was spent.

The federal share of the 1991-92 hydrometric program was $1 013 749; the provincial share was $524 759. A provincial surplus carry-over of $21 466 from 1990-91 and 1991-92 payment of $535 034 results in a provincial surplus of $31 741 for 1991-92 operations. The Schedule D costs for the 1992-93 fiscal year are estimated to be $450 000.

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1.0 INTRODUCTION

This is the seventeenth annual report summarizing the activities of the Canada-Saskatchewan Coordinating Committee established by the Memorandum of Agreement for Water Quantity Surveys in 1975. The Agreement, along with Schedules A,B,C and D which detail operational, administrative and cost Sharing arrangements, is included as Appendix D. The report contains brief summaries of the two Coordinating Committee meetings convened during the fiscal year ending March 31, 1992 as well as a summary of surface water conditions, hydrometric operations, construction activities and hydrometric network changes.

The federal share of 1991-92 program costs was $1 013 749; the provincial share was $524 759. A provincial surplus carry-over of $21 466 from 1990-91, and a 1991-92 payment of $535 034 results in a provincial surplus of $31 741 for 1991-92 operations.

The costs for the 1992-93 fiscal year are estimated at $450 000. Details of the cost sharing arrangements for 1992-93 are provided in the report.

2.0 SUMMARY OF ACTIVITIES

2.1 CANADA-SASKATCHEWAN COORDINATING COMMITTEE MEETINGS

The Canada-Saskatchewan Coordinating Committee met twice during the report year, on November 21, 1991 and on March 5, 1992 to discuss issues of mutual interest. The highlights of these meetings are summarized in the following sections.

2.1.1 Coordinators' Meeting - November 21, 1991

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

The financial status for 1991-92 and the outlook for the next fiscal year were discussed at this meeting. The potential impacts of federal and provincial budget restraint were discussed in terms of possible re-designation of stations or overall network reductions. Schedule A for 1992-93 could not be finalized, and therefore, no estimate of Schedule D was made.

The 1991-92 hydrometric and sediment program activities were highlighted. These included: a change to the ANIKOM AMIS system for real-time data collection; hydrometric monitoring needs for

the proposed Battle Creek Reservoir; the Hydrologic and Morphologic (H&M) survey on the Beaver River near Dorintosh and production of the H&M Fact Sheet for Qu'Appelle River near Welby; a potential reduction in the network operated in support of the Prairie Provinces Water Board (PPWB); the WRB data publication schedule; and, the proposed change from 10-day to 15-day accounting periods for international apportionment of Frenchman River, and Battle and Lodge Creeks.

Network planning activities were discussed with reference to: the completion of the "Water Resources Monitoring Map" for Saskatchewan; the status of the Souris River pilot GIS study; and, proposals to enhance the flow forecasting and urban flood forecasting networks.

During the meeting a review of the federal-provincial and provincial networks was conducted. It was agreed that Lake Diefenbaker at Saskatchewan Landing (05HC004) would be discontinued as of October 31, 1991, and that the future status of 5 stations would be studied. The operation of Russell Creek Reservoir (05JB006), Lac Pelletier near Vesper (05HD028), Kenosee Lake near Carlyle (05ND009), White Bear Lake near Carlyle (05ND008), and Fife Lake near Lisieux (11AE016) had been transferred to the province on June 1, 1991. It was agreed that Schedule A for 1992-93 would reflect the discontinuance of Lake

Diefenbaker at Saskatchewan Landing and the change in operator for the 5 lake stations.

The 1991-92 construction program was discussed with reference to the completion of 8 new stations to monitor the Rafferty/Alameda project, and the installation of a geoweb control at Wood River Diversion to Chaplin Lake (05JC005). It was anticipated that the 1992-93 construction program would consist primarily of projects carried over from 1991-92.

2.1.2 Coordinators' Meeting - March 5, 1992

The meeting was attended by Mr. R.G. Boals; member for Canada; Mr. A.B. Banga, member for Saskatchewan; B.N. Johnson, WRB; F.M. Renouf, WRB; P.J. Pilon, WRB; D.P. Euteneier, Sask Water; D.L. Truelove, Sask Water; R. Bourdages, WRB-HQ; and P.J. M^{c}Curry, WRB-HQ.

Presentations were made to the coordinators on the WRB national modernization program, Project 2000, and the Urban Flood Forecasting Project under the Emergencies and Warnings portion of the Green Plan.

Initial approval was given to the federal-provincial and provincial projects in the 1992-93 construction program. The construction requirements for a hydrometric station on the proposed Battle Creek Reservoir were discussed.

Hydrometric and sediment operations were discussed with reference to spring runoff monitoring and reporting requirements, progress of the Shoreline Erosion study, and difficulties experienced with the latest version of the HYDAT CD-ROM.

Schedule A for 1992-93 could not be finalized at this meeting for the following reasons: discussions had begun to assess the possibility of Sask Water becoming the operator of the hydrometric network in the Qu'Appelle River Basin; and, the designation of stations constructed to monitor the Rafferty/Alameda project had not been agreed to. At the time of the meeting it was agreed that Schedule A for 1992-93 would be modified to reflect the discontinuance of Thunder Creek near Darmody (05JG012) and Knox Coulee near Tuxford (05JG015). WRB announced that no changes to the network operated on behalf of PPWB would take place in 1992-93. No agreement was reached on the value of Schedule D for 1992-93.

2.2 OPERATIONAL CONSIDERATIONS

2.2.1 Surface Water Conditions and Hydrometric Activities

In the southern half of Saskatchewan, the winter of 1990-91 was marked by normal to below normal precipitation coupled with frequent periods of above normal temperatures. These two conditions resulted in a general below normal spring runoff for southern streams in 1991. Above normal winter precipitation in

the northwestern portion of the province resulted in high spring peaks on streams in the M^{ac}Kenzie River basin. Historic high flow measurements were made on the Cree, Otherside, Tazin and Abitau Rivers in May during normal remote area field coverage. A similar historic high water measurement was made on the Fond du Lac River on a separate trip in June.

Precipitation was above normal in most areas of the province during May and June. Streamflows in southern areas showed little recovery during this period while northern rivers remained in the high flow range. Heavy rainfalls in the southwestern portion of the province during late June and early July resulted in significant runoff in the Frenchman and Wood River basins. As the result of a series of heavy rainfall events in Alberta, high flow rates were observed on both the North Saskatchewan and South Saskatchewan Rivers during the summer months. Additional field coverage was required to monitor these high water events. An historic high flow measurement was made on the Frenchman River at the International Boundary in early July.

Generally, normal weather conditions were reported through August, September and early October. Major streams demonstrated normal recessions and most small southern streams went to zero flow during this period. Record cold temperatures in late October and early November caused an early freeze-up.

The winter months were marked by moderate temperatures and normal to below normal precipitation. Snow accumulation was below normal in most areas. Above normal temperatures in February and March brought on an early, extended, below normal runoff to the southern parts of the province. Seasonal station opening in 1992 was advanced by a month, and spring runoff coverage began in late January and continued past the fiscal year end. Irrigation coverage in Battle Creek, Lodge Creek and Frenchman River basins began in February.

Data computations and hydrometric field work were completed as scheduled during the year. An H&M survey was conducted at the Beaver River near Dorintosh in August. Drought conditions in the Souris River basin necessitated additional apportionment computations and additional field coverage to monitor late season releases.

Members of the Public Service Alliance of Canada (PSAC) went on strike in September 1991. Approximately 35 person-weeks of hydrometric staff time was lost to the strike.

Hydrometric Supervisors were trained in streambed material sampling techniques. Additional staff training was provided on a personal basis in the use of standard personal computer software packages and in supervisory methods. In total, staff training

consumed 0.25 person years, or approximately 3 days per hydrometric field person.

2.2.2 Construction Activities

There were 61 construction projects completed during the fiscal year (9 construction, 4 upgrading and 48 maintenance). Eight new stations were constructed in the Souris River basin to monitor the Rafferty/Alameda project and a temporary station was built at Cypress Lake West Outflow Canal (11AB077). The upgrading projects varied from replacing a temporary station and a manometer station with standard well installations to completely relocating in-bank stations. The maintenance was generally to repair controls, improve wading sections and install bench marks.

Schedule D for 1991-92 was amended to include an allotment of $161 000 by the province for the construction of 10 new hydrometric monitoring stations to accommodate the Rafferty/Alameda project. Eight stations were constructed under this contract during FY 1991-92. The provincial share of the cost for these 8 stations was $90 362.58. The stations that were constructed are:

05ND012	Alameda Reservoir near Alameda
05ND010	Moose Mountain Creek above Alameda Reservoir
05NB036	Souris River below Rafferty Reservoir
05ND011	Tributary near Alameda
05NB035	Tributary near Goodwater
05NB033	Tributary near Halbrite
05NB037	Unnamed Reservoir near Goodwater
05NB034	Roughbark Creek near Goodwater

The total cost of the 1991-92 hydrometric construction program was $74 460.37. The provincial share of this cost was $12 641.29 and the federal share was $61 819.08. Details of the construction program are documented in the 1991-92 Saskatchewan Construction, Upgrading and Maintenance Report.

2.2.3 Data Requests

During fiscal year 1991-92, 242 request for data and information were handled. Requests can be categorized by the type of information desired. These classifications include current (data not published at the time of the request), historic (data available in publications, on CD-ROM or on computer tape), and other (station descriptions, station profiles, publications, cross-sections, maps, etc.). The majority of requests fell into the classes of "current" and "other".

Clients receiving data included universities, other government departments (federal and provincial), and non-government organizations such as Ducks Unlimited, crown corporations, consultants, private citizens, and schools.

In addition to the written and verbal requests, data were regularly provided by dial-in access to the mini-computer system and by informal discussions in the field. Computed information and advice on the international and interprovincial apportionment status for three river basins in south-western Saskatchewan were

provided every 10 days to as many as thirty agencies, individuals or organizations. The Rafferty-Alameda project and apportionment conditions of the Souris River generated a considerable number of requests for current and historical data. At the request of the International Souris River Board of Control three extra interim apportionment computations were prepared and distributed. The requests noted in this paragraph are not included in the reported total.

Two new or updated data products were provided to clients in 1991-92. They were version 3.0 of the HYDAT database and software on CD-ROM and a new 1:1,000,000 scale map of Saskatchewan showing the surface water quantity monitoring network. The version 3.0 CD-ROM contains hydrometric and sediment data for the period of record up to 1990 plus information on location, drainage area and equipment operated for all stations published by Water Resources Branch.

The Water Resources Branch, Saskatchewan Division has begun the production of a series of river reach "Fact Sheets". These Fact Sheets summarize the hydrologic and morphologic characteristics at a gauging station reach. Fact Sheets have been completed for the Qu'Appelle River below Loon Creek and the Qu'Appelle River below Craven Dam. Fact Sheets for the Qu'Appelle River near Welby, the Beaver River near Dorintosh and a shorter version of

the fact sheet for McDonald Creek near McCord are scheduled for completion in 1992-93.

3. NETWORK DEVELOPMENT

3.1 NETWORK DEVELOPMENT IN SASKATCHEWAN

The historical development of the Saskatchewan hydrometric network and the annual increase in the streamflow database are shown in Figures 1 to 3. These figures illustrate the rapid increase in the acquisition of hydrometric data since the 1950s and the relative stability of the network during the last twenty years.

FIGURE 1:
HYDROMETRIC NETWORK DEVELOPMENT
IN SASKATCHEWAN

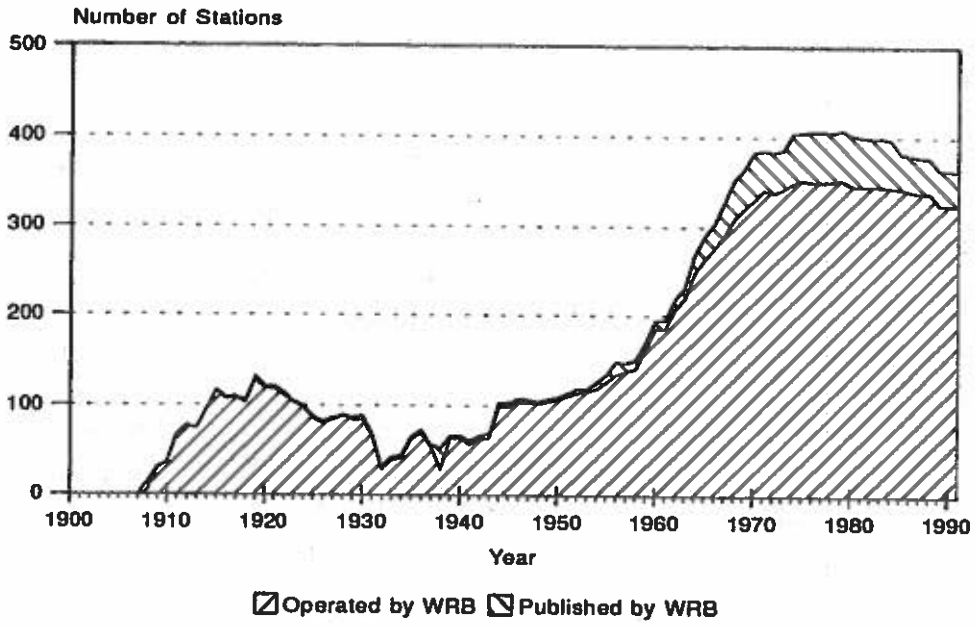


FIGURE 2:
DEVELOPMENT OF THE HYDROMETRIC NETWORK
OPERATED BY WRB IN SASKATCHEWAN

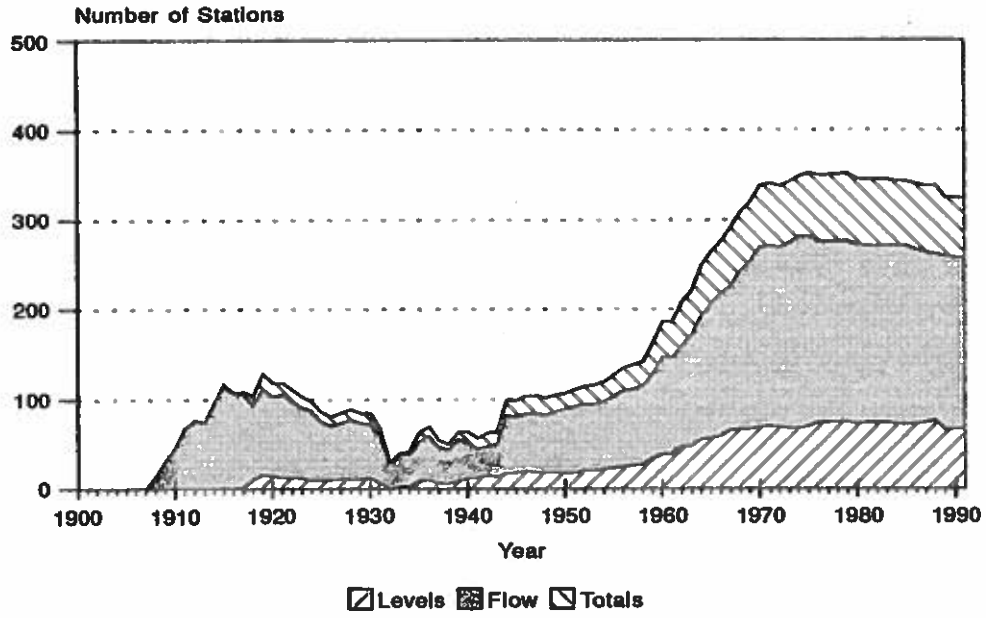
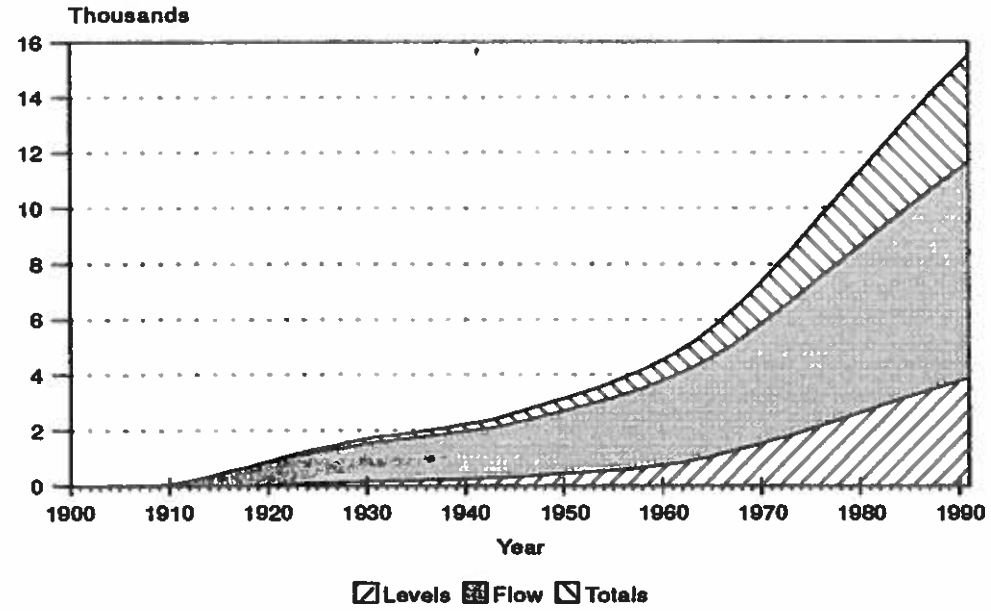


FIGURE 3:
CUMULATIVE STATION YEARS
OF HYDROMETRIC DATA IN SASKATCHEWAN



The number of hydrometric stations operated within Saskatchewan since 1975 has been relatively constant. Changes to the network from the inception of the cost-sharing agreement are illustrated in the following:

Year	Stations Added*	Stations Deleted*
1975-76	52	6
1976-77	11	4
1977-78	6	8
1978-79	10	3
1979-80	0	1
1980-81	3	11
1981-82	2	2
1982-83	1	3
1983-84	22	1
1984-85	0	0
1985-86	2	0
1986-87	2	8
1987-88	3	10
1988-89	0	4
1989-90	8	0
1990-91	0	0
1991-92	0	1
Total	122	65

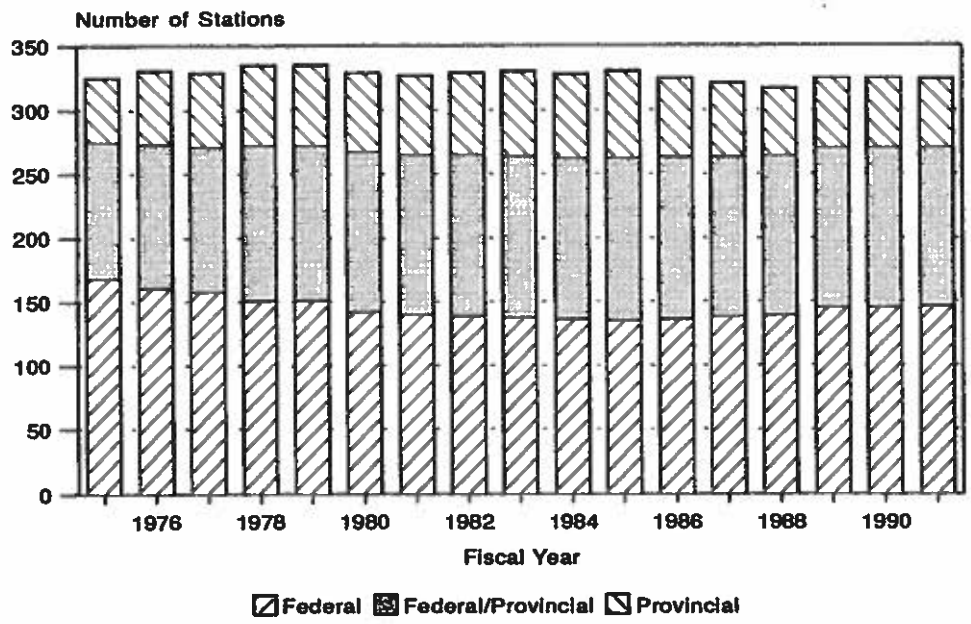
* Includes all stations from Schedule A other than contributed data.

The stations added to Schedule A over this period represent approximately 38% of the hydrometric network operated by WRB and Sask Water as of April 1, 1991, and the stations deleted from the Schedule represent 20% of the network.

In addition to the 187 stations which have been added to or deleted from the network, many station designation changes have also occurred during the period. In general, there has been a decrease in the number of federal stations and an almost equal increase in federal-provincial stations. The federal stations represented 52% of the total network in

1975-76 and 45% in 1991-92 while the federal-provincial category represented 32% in 1975-76 and 38% in 1991-92. The provincial stations represented 16% of the network in 1975-76 and 17% in 1991-92. The provincial portion of the network was at its peak at 21% in 1985-86. Figure 4 illustrates the changing nature of designated responsibility of the hydrometric network operated by WRB since the inception of the cost-sharing agreement.

FIGURE 4:
HYDROMETRIC STATIONS OPERATED BY
WRB IN SASKATCHEWAN SINCE 1975



3.2 NETWORK CHANGES FOR 1991-92

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

The changes to Schedule A as of April 1, 1991 were to discontinue the operation of South Saskatchewan River below Gardiner Dam (05HF004), and to change the designation of Cutarm Creek near Spyhill (05HF015) from FP3 (Regional Water Quantity Inventory) to F2 (Interprovincial Waters).

3.3 NETWORK OPERATORS - SASK WATER PROPOSAL

Between March 10, 1992 and August 11, 1992 WRB and Sask Water met on 6 occasions to discuss a proposal from Sask Water to have the province become an operator under the Agreement. Initial discussions centred on the feasibility of transferring operation of two complete field areas in the Qu'Appelle River basin to provincial operation. However, when the issues of National Standards compliance and costing methods could not be resolved Sask Water altered its proposal to that of operating all normal access stations designated as Provincial (P1 and P2).

The major agreements reached during the above-mentioned meetings were: to re-designate 16 stations as of April 1, 1992; on July 1, 1992 Sask Water would assume the operation of 38 P1 and P2 hydrometric stations; and, computation of the hydrometric record for the period ending June 30, 1992 for the 38 transferred stations would be completed by WRB. The stations re-designated are listed in Table 1 and the stations transferred to Sask Water to operate are listed in Table 2.

TABLE 1

STATION DESIGNATION CHANGES
FOR FISCAL YEAR 1992-93

STATION NUMBER	STATION NAME	DESIGNATION 1991-92	DESIGNATION 1992-93
05NB012	Boundary Reservoir near Estevan	F3	P1
11AE013	Cookson Reservoir near Coronach	F3	P1
05HA076	Maple Creek below Junction Reservoir	F1	FP1
06BA001	Churchill Lake at Buffalo Narrows	FP3	FP1
11AC001	Frenchman River below Eastend Reservoir	F3	FP1
05HD039	Swift Current Creek near Leinan	FP3	FP2
05NB017	Souris River near Halbrite	FP3	FP2
05ND004	Moose Mountain Creek near Oxbow	FP3	FP2
05FF003	Cutknife Creek near Cutknife	P1	FP3
05GB004	Muddy Lake Inflow near Revenue	P1	FP3
05GC007	Opuntia Lake West Inflow	P1	FP3
05HG021	Inverness Creek near Broderick	P1	FP3
05KB011	Doghide River near Runciman	P1	FP3
05LD003	Overflowing River near Hudson Bay	P1	FP3
05MA016	Romance Creek near Watson	P1	FP3
11AE014	East Poplar River above Cookson Reservoir	P2	FP3

TABLE 2

STATIONS TO BE TRANSFERRED TO SASK WATER
OPERATION ON JULY 1, 1992

STATION NUMBER	STATION NAME	OPERATION
05NB012	Boundary Reservoir near Estevan	12L
05HG006	Brightwater Reservoir at Riparian Outlet	8L
05HF017	Broderick Reservoir at West Embankment	8L
05JE009	Brokenshell Creek near Trossachs	8Q
05KE008	Candle Lake at Candle Lake	8L
05KA001	Carrot River near Kinistino	8Q
05KD006	Coddette Reservoir above the Spillway	12L
05MC004	Conjuring Creek near Preeceville	8Q
11AE013	Cookson Reservoir near Coronach	12L
05LA003	Duck Creek near Kelvington	8Q
05GC002	Eagle Creek near Anglia	8Q
05JK008	Echo Creek at Fort Qu'Appelle	8Q
05EF006	Englishman River near Spruce Lake	8Q
05JC007	Flowing Well West Inflow near Flowing Well	8Q
11AE015	Girard Creek near Coronach	8Q
05JF014	Hunter Creek near Richardson	8Q
05EG003	Jackfish Lake near Cochin	8L
05KE007	Kelsey Creek near Garrick	8L
05KB008	Little Bridge Creek near Armley	8L
05LB008	M^{c}Nab Creek near Somme	8Q
06AD009	Makwa River at Outlet Makwa Lake	8Q
06AD010	Meadow River above Meadow Lake	12Q
05MA023	Milligan Creek near Wadena	8Q
05JE002	Moose Jaw River near Lang	8Q
06AD008	Morin Creek near Meadow Lake	8Q
06AE001	Norbury Creek near Spiritwood	8Q
05LA004	Pipestone Creek near Rose Valley	8Q
05LB010	Prairie River near Prairie River	8Q
05LA005	Red Deer River near Archerwill	8Q
05HG019	S.S.E.P. East Main Canal below Broderick Reservoir	8Q
05JG001	Sandy Creek near Caron	8Q

STATION NUMBER	STATION NAME	OPERATION
05HC003	Snipe Lake North Inflow	8Q
05NB031	Souris River near Bechard	8Q
05NB030	Souris River near M'Taggart	8Q
05HF022	Unnamed Creek near Cutbank	8Q
05JE008	Wilcox Main Ditch near Wilcox	8Q
05JC006	Wiwa Creek near St. Boswells	8Q
05JC005	Wood River Diversion to Chaplin Lake	8Q

4.0 COSTS OF OPERATION: 1991-92

This section contains Tables 3 to 10 which provide details of expenditures under the Memorandum of Agreement. Expenditures were extracted from various departmental financial systems such as payroll, materiel and fleet management. Operations expenditures were obtained from Supply and Services Canada detailed transaction listings. A record of individual expenditures is further supported by various purchase/pay documents which, under the federal records management system, are retained for a period of five years.

4.1 DERIVATION OF STATION UNITS

The calculation of station units provided in Table 3 is derived from Schedule A of the Memorandum of Agreement (Appendix C) which lists the hydrometric network stations as of April 1, 1991. Provincial stations operated by Sask Water and published by WRB are not considered in the

derivation of station units because these stations are not included for costing purposes (Memorandum of Agreement, Article V (b)).

Total operational costs of hydrometric stations vary significantly with the period of operation (seasonal or annual) and with the type of data produced (water level only or water level and flow). Weighting factors to account for these differences and to convert stations to station units have been assigned as follows:

8 month water level station (8L) = 0.25

12 month water level station (12L) = 0.40

8 month flow station (8Q) = 0.75

12 month flow station (12Q) = 1.00

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

TABLE 3

SASKATCHEWAN WATER QUANTITY PROGRAM
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1991-92

DESIGNATION	TYPE	NO. OF STATIONS**	CONVERSION	STATION UNITS
Federal				
Remote Access	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	13	1.00	13.00
		16		14.20
Normal Access	8L	11	0.25	2.75
	12L	11	0.40	4.40
	8Q	19	0.75	14.25
	12Q	23	1.00	23.00
		64		44.40
International	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	39	0.75	29.25
	12Q	8	1.00	8.00
		66		42.60
Total		146		101.20

DESIGNATION	TYPE	NO. OF STATIONS**	CONVERSION	STATION UNITS
Federal-Provincial				
Remote Access	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	15	1.00	15.00
		18		16.20
Normal Access	8L	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	84	0.75	63.00
	12Q	15	1.00	15.00
		106		80.50
Total		124		96.70

continued ...

TABLE 3 (concluded)

DESIGNATION	TYPE	NO. OF STATIONS**	CONVERSION	STATION UNITS
Provincial				
Remote Access	8L	0	0.25	0.00
	12L	1	0.40	0.40
	8Q	0	0.75	0.00
	12Q	3	1.00	3.00
		4		3.40
Normal Access	8L	10	0.25	2.50
	12L	1	0.40	0.40
	8Q	38	0.75	28.50
	12Q	1	1.00	1.00
		50		32.40
Total		54		35.80
Grand Total		324		233.7

** From Schedule A

4.2 DETAILED PROGRAM COSTS

4.2.1 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 4. A factor of 1.25 was applied to the salary costs for remote and international gauging stations for the first four years of the Agreement (1975-1979) to account for the greater effort needed to operate these types of stations.

Based on an analysis of 1978-79 salary costs, these factors were revised to 1.10 for remote stations and 1.40 for international stations and were used until 1987-88. Based on a 1988 review of salary costs, a factor of 1.25 has been used in this report for international gauging stations and 1.0 for normal and remote stations. These factors will be used until 1992-93 unless revisions are justified during this five-year period.

Total person-year utilization during 1991-92 is reported in Table 4 to be 20.13 person years. This figure does not reflect the time lost as a result of the PSAC strike; approximately 35 person weeks (0.67 PY). The reported salary values do reflect the strike period. Salary increases are the result of contract salary increases for the hydrometric staff as well as some incremental increases for individuals who have not advanced to top of their classification level. Although total salary costs increased by 3.5%, unit salary values showed a 3.7% increase. This discrepancy is caused by a slight reduction in the total number of station units being operated.

TABLE 4
SASKATCHEWAN WATER QUANTITY PROGRAM
SALARY COST 1991-1992

	Position No.	Position Title	Salary
1.	2411-00006 (x0.75)	Hydrometric Supervisor	$ 37 868
2.	2411-00025	Hydrometric Technologist	$ 38 659
3.	2411-00016	Hydrometric Technologist	$ 43 171
4.	2411-00032	Hydrometric Technologist	$ 44 370
5.	2411-00018	Hydrometric Supervisor	$ 49 568
6.	2411-00022	Hydrometric Technologist	$ 43 091
7.	2411-00026	Hydrometric Technologist	$ 44 370
8.	2411-00007	Hydrometric Supervisor	$ 47 661
9.	2411-00024 (x0.83)	Hydrometric Technologist	$ 35 087
10.	2411-00008	Hydrometric Supervisor	$ 47 456
11.	2411-00009	Hydrometric Supervisor	$ 49 568
12.	2411-00017	Hydrometric Technologist	$ 43 678
13.	2411-00033 (x0.75)	Hydrometric Technologist	$ 30 949
14.	2411-00034	Hydrometric Technologist	$ 43 091
15.	2411-00023	Hydrometric Technologist	$ 43 171
16.	2411-00027	Hydrometric Technologist	$ 42 264
17.	2411-00021	Hydrometric Technologist	$ 42 019
18.	2411-00020	Hydrometric Technologist	$ 44 036
19.	2411-00019 (x0.85)	Hydrometric Technologist	$ 37 716
20.	2411-00030 (x0.23)	Construction Supervisor	$ 1 186
21.	2411-09008 (x0.33)	Hydrometric Assistant	$ 9 582
22.	2411-00012 (x0.025)	Computations Technician	$ 1 545
23.	2411-09009 (x0.33)	Hydrometric Assistant	$ 9 582
24.	2411-00028 (x0.05)	Laboratory Technician	$ 1 718
25.	2411-09004 (x0.75)	Hydrometric Technician	$ 27 811
26.	2411-00015 (x0.025)	Boundary Waters Engineer	$ 1 458
27.	COSEP (x0.92)	Hydrometric Assistant	$ 19 816
28.	Overtime	All Positions	$ 20 097
29.	H&M Survey (less 0.25 p-y)	All Positions	($ 11 300)
30.	Training (less 0.25 p-y)	All Positions	($ 11 300)
	TOTAL	(20.13 P-Ys)	$877 988

CALCULATION OF STATION UNIT SALARY COST

Station Units:	
Remote Access	33.80
Normal Access	157.30
International	42.60
TOTAL	233.70

Salary-weighted Station-Units:	
Remote Access	33.80
Normal Access	157.30
International x 1.25	53.25
TOTAL	244.35

$$\text{Unit Salary Cost} = \frac{\text{Total Salary Cost}}{\text{Salary-weighted Station Units}} = \frac{\$877988}{244.35} = \$3593$$

Unit Salary Cost Normal =	$ 3 593
Unit Salary Cost Remote =	$ 3 593
Unit Salary Cost International = $3 593 x 1.25 =	$ 4 491

4.2.2 Operation and Maintenance Costs

The derivation of station unit operating costs is shown in Table 5. A record of expenditures, vehicle operating costs, and a derivation of computer operating costs are provided in Appendix A.

Although total O&M costs remained almost at 1990-91 levels the unit O&M costs for the 3 classes of stations did demonstrate some change. Unit O&M costs for normal access and international stations increased by $25 and $222 respectively over 1990-91 values. Unit O&M costs for remote access stations decreased by $215 over the same period.

Significant cost savings were realized in the areas of equipment rental and parts and consumable tools. The reduction in rental costs is primarily because of lower aircraft charter cost to operate the remote network. The reduction in the amount spent on parts and consumable tools reflects the completion of re-stocking the WRB warehouse. Significant cost increases occurred in the areas of equipment repairs, electrical power, non-professional services, and vehicle operating costs. The increases in equipment repair and vehicle operating costs reflect the fact that the WRB vehicle fleet and capital equipment are aging and, therefore, require more frequent servicing. The non-professional services cost increase comes as the result of a contract servicing levy being charged by the Department of Supply and Services (DSS).

TABLE 5

SASKATCHEWAN WATER QUANTITY NETWORK
OPERATIONS COST SUMMARY 1991-92

	COST CODE* 305	306	307	TOTAL
Travel	56 021	8 077	12 564	76 662
Transportation and Postage	1 381	708	905	2 994
Telephones	8 003	1 563	6 000	15 566
Advertising and Printing Services	830	156	1 059	2 045
Professional and Special Services	2 605	0	0	2 605
Building & Structures Repairs	10	400	0	410
Other Services	6 905	8 563	2 036	17 504
Rentals	1 963	134 615	69	136 647
Purchased Repairs (other than vehicles)	7 439	3 210	1 947	12 596
Public Utility Services	47 966	0	7 267	55 233
Purchased Materials (other than capital)	14 753	8 589	2 190	25 532
Parts and Consumable Tools (other than vehicles)	15 197	5 097	3 416	23 710
Other Expenditures	896	460	5	1 361
Sub-Total	163 969	171 438	37 458	372 865
Current Meter Maintenance	3 929	844	1 064	5 837
Minicomputer Costs**	49 908	10 722	13 517	74 147
Vehicle Operating Costs (Table 8)	34 789	4 379	14 348	53 516
Total Operating Costs	252 595	187 383	66 387	506 365
Station Units	157.30	33.80	42.60	233.70
Unit Operations Cost	1 606	5 544	1 558	2 167

* 305 - conventional
306 - remote
307 - international

** See Appendix A for details

4.2.3 Capital Depreciation Costs

Capital depreciation is charged for hydrometric survey and construction vehicles and equipment as shown in Tables 6 and 7. Consumable goods such as small tools and clothing are charged to the program at the time of purchase as are certain other items such as metering boats that are part of the inventory of a specific station. All stage recording instruments are excluded.

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

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

Capital costs decreased significantly in 1991-92 because a significant amount of equipment still in use was fully depreciated during the year.

TABLE 6

SASKATCHEWAN WATER QUANTITY PROGRAM
CAPITAL DEPRECIATION COSTS 1991-92

1. VEHICLE DEPRECIATION (Table 7)		$64 004
2. EQUIPMENT DEPRECIATION*		
- Field Equipment	$ 31 639	
- Marine Equipment	$ 4 807	
- Scientific Equipment	$ 12 831	
- Transportation Equipment	$ 29 205	
- Shop & Construction Equipment	$ 19 794	
- Accountable Items	$ 2 402	
Total Inventory Value March 31, 1992	$100 678	
Total Inventory Value March 31, 1991	$193 139	
Average Inventory Value for 1991-92	$146 908	
Capital Depreciation of Equipment @ 10%	$146 908 x 10%=	$14 691
3. TOTAL CAPITAL DEPRECIATION		$78 695
4. UNIT CAPITAL DEPRECIATION		
Total Capital Depreciation/Total Station Units = $78 695/233.70 =		$ 337

* Departmental Equipment-In-Use Material Management System

TABLE 7

SASKATCHEWAN WATER QUANTITY PROGRAM
VEHICLE DEPRECIATION COSTS 1991-92

Multi-Purpose Vehicles and Trucks Lifetime - 72 Months
Medium Truck Lifetime - 84 Months

VEHICLE NUMBER	ORIGINAL CAPITAL COST $	DEPR PER MONTH $	TIME IN USE	ANNUAL DEPR $	REMARKS
83-149	14 395	200	12	-	Fully Depreciated
84-126	21 549	257	12	-	Fully Depreciated
85-087	13 506	188	12	752	Fully Depr. After 4 mo.
85-089	8 478	118	12	118	Fully Depr. After 1 mo.
85-090	13 506	188	12	752	Fully Depr. After 4 mo.
85-046	16 174	225	12	2 700	
86-048	15 400	214	12	2 568	
86-049	13 056	181	12	2 172	
86-050	11 641	162	12	1 944	
86-051	14 611	203	12	2 436	
87-085	16 691	232	12	2 784	
87-086	16 691	232	12	2 784	
87-087	18 449	256	12	3 072	Construction
87-088	16 691	232	12	2 784	
87-089	16 691	232	12	2 784	
88-045	14 224	198	12	2 376	
88-046	18 673	259	12	3 108	
88-047	18 673	259	12	3 108	
89-171	21 125	293	12	3 516	
89-172	21 125	293	12	3 516	
89-173	21 125	293	12	3 516	
89-174	15 760	219	12	2 628	
90-186	20 809	289	12	3 468	Construction
90-187	15 399	214	12	2 604	
91-239862	19 680	273	8	2 184	
91-234203	88 637	1 055	6	6 330	Construction
				$64 004	

Capital Cost of Vehicles Purchased in 1991-92 = $108 317

Vehicle depreciation = $64 004

* Crown Assets Disposal Corporation

4.3 STATION UNIT AND TOTAL PROGRAM COSTS

The station unit costs and total network costs for salary, operations and maintenance (O&M), and capital for 1991-92 that are summarized in Tables 8 and 9 are derived from the detailed program costs provided in Section 4.2.

Total shareable costs to run the hydrometric network in 1991-92 increased by $20 549 or 1.4% over the costs for the previous year. The Inflation Index based on Government Current Expenditures on Goods and Services increased by 4.55% during the same period. Individually, salary and O&M costs increased by $30 020 (3.5%) and $5 474 (1.1%), while capital costs decreased by $14 945 (16.0%).

TABLE 8

SASKATCHEWAN WATER QUANTITY PROGRAM
UNIT COST SUMMARY 1991-92

STATION CLASSIFICATION	UNIT	SALARY $	OPERATIONS $	CAPITAL $	TOTAL $
Normal Access					
- Non-International	1.0	3 593	1 606	337	5 536
- International	1.0	4 491	1 558	337	6 386
Remote Access	1.0	3 593	5 544	337	9 474

TABLE 9

SASKATCHEWAN WATER QUANTITY PROGRAM
TOTAL COST SUMMARY 1991-92

STATION CLASSIFICATION	NO. OF STATIONS	UNITS	SALARY $	OPERATIONS $	CAPITAL $	TOTAL $
Federal						
Remote	16	14.20	51 023	78 723	4 782	134 528
Normal						
- Non-International	64	44.40	159 536	71 298	14 951	245 785
- International	66	42.60	191 336	66 387	114 345	272 068
						652 381
Federal-Provincial						
Remote	18	16.20	58 209	89 811	5 455	153 475
Normal	106	80.50	289 249	129 268	27 107	445 624
						599 099
Provincial						
Remote	4	3.40	12 217	18 849	1 145	32 211
Normal	50	32.40	116 418	52 029	10 910	179 357
						211 568
Grand Total	324	233.7	877 988	506 365	78 695	1 463 048

4.4 DETERMINATION OF FEDERAL AND PROVINCIAL SHARE OF COSTS

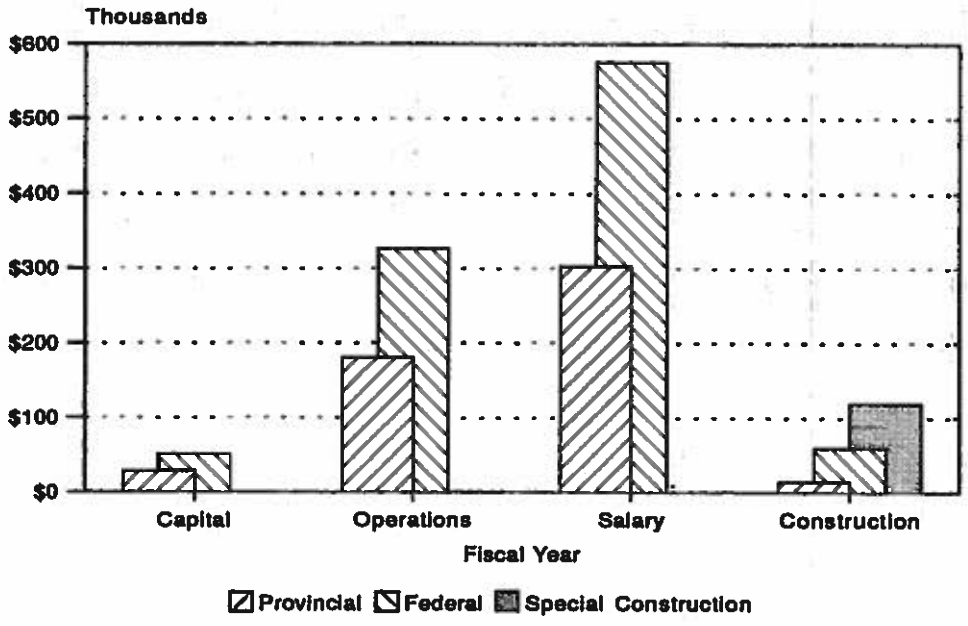
Table 10 and Figure 5 summarize the shared costs for 1991-92. The federal share of the shareable water quantity monitoring program costs was $1 013 749 while the provincial share was $524 759. The provincial surplus from 1990-91 of $21 466 and the provincial payment for 1991-92 of $535 034 result in a provincial surplus of $31 741 for 1991-92 operations.

TABLE 10

SASKATCHEWAN WATER QUANTITY PROGRAM
SHARED COST SUMMARY 1991-92
(From Table 9 & Construction Report)

FEDERAL SHARE = $652 381 + $599 099 / 2	$951 930	
FEDERAL CONSTRUCTION SHARE	$ 61 819	
TOTAL FEDERAL SHARE		$1 013 749
PROVINCIAL SHARE = $211 568 + 599 099 / 2	$511 118	
PROVINCIAL CONSTRUCTION SHARE	$ 12 641	
SEDIMENT ANALYSIS	$ 1 000	
TOTAL PROVINCIAL SHARE		$524 759
PROVINCIAL SURPLUS (FROM 1990-1991)		$(21 466)
TOTAL OF OTHER PROVINCIAL COSTS		-
TOTAL PROVINCIAL SHARE		$503 293
PROVINCIAL PAYMENT		($535 034)
PROVINCIAL SURPLUS		$31 741

FIGURE 5:
HYDROMETRIC SURVEY PROGRAM
SHARED COST SUMMARY (1991-92)



4.5 HISTORIC STATION UNIT COSTS

Table 11 and Figures 6 to 8 show the changes in station-unit costs since the implementation of the cost sharing agreement in 1975.

TABLE 11

SASKATCHEWAN WATER QUANTITY PROGRAM
HISTORICAL SUMMARY OF STATION UNIT COSTS

FISCAL YEAR	NORMAL		INTERNATIONAL		REMOTE	
	COST	CHANGE*	COST	CHANGE*	COST	CHANGE
1975-76	$1 583	-	$1 810	-	$3 643	-
1976-77	$1 721	8.7%	$1 971	8.9%	$3 949	8.4%
1977-78	$1 928	12.0%	$2 220	12.6%	$4 213	6.7%
1978-79	$2 106	9.2%	$2 434	9.6%	$4 501	6.8%
1979-80	$2 200	4.5%	$2 791	14.7%	$4 631	2.9%
1980-81	$2 415	9.8%	$3 055	9.5%	$5 894	27.3%
1981-82	$3 067	27.0%	$3 852	26.1%	$5 993	1.6%
1982-83	$3 297	7.5%	$4 170	8.3%	$7 003	1.7%
1983-84**	$3 615	9.6%	$4 375	4.9%	$6 872	-1.9%
1984-85	$3 741	3.5%	$4 473	2.2%	$7 244	5.4%
1985-86	$4 063	8.6%	$4 808	7.5%	$7 277	0.5%
1986-87	$4 379	7.8%	$5 185	7.8%	$8 604	18.2%
1987-88	$4 435	1.3%	$5 141	-0.8%	$8 352	-2.9%
1988-89***	$4 612	4.0%	$4 783	-7.0%	$8 216	-1.6%
1989-90	$4 871	5.6%	$5 199	8.7%	$8 784	6.9%
1990-91	$5 446	11.8%	$6 067	16.7%	$9 624	9.6%
1991-92	$5 536	1.7%	$6 386	5.3%	$9 474	-1.6%
1975-92	-	249.7%	-	252.8%	-	160.1%

Average percent increase for all stations since 1975-76 = 204.1%

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

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

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

FIGURE 6:
CONVENTIONAL HYDROMETRIC STATION
ANNUAL UNIT COSTS

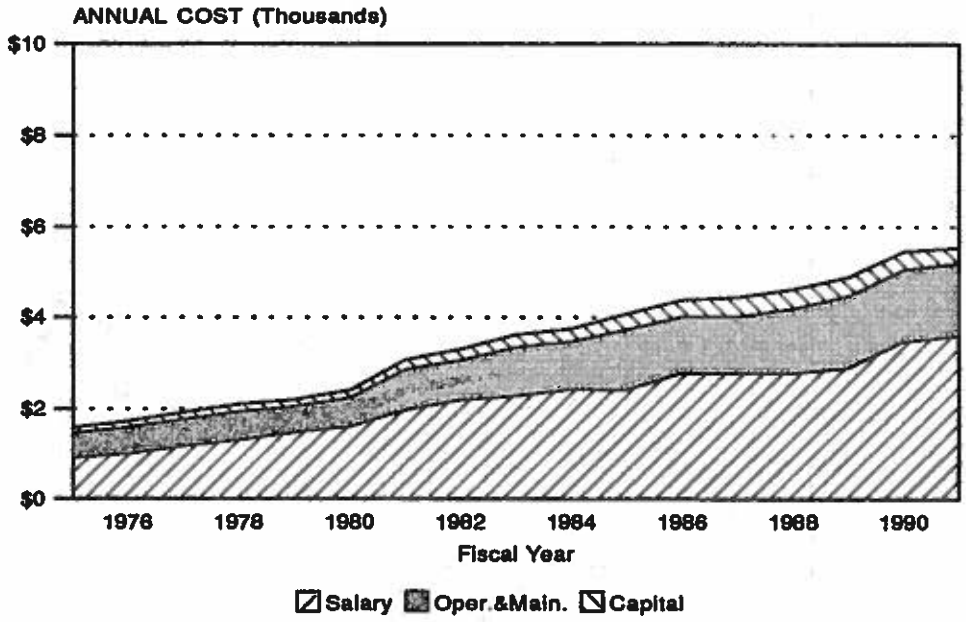


FIGURE 7:
REMOTE HYDROMETRIC STATION
ANNUAL UNIT COSTS

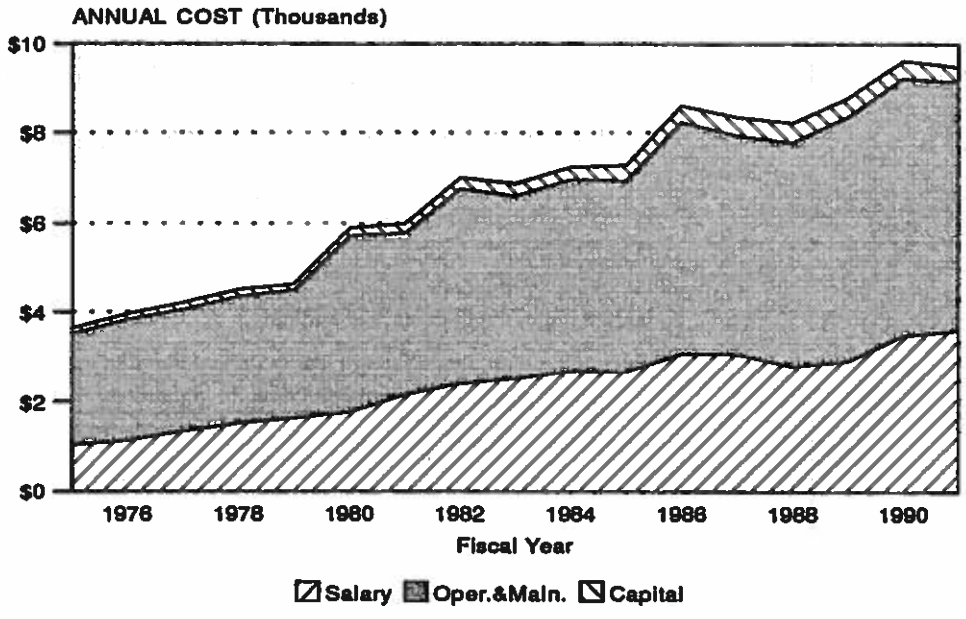
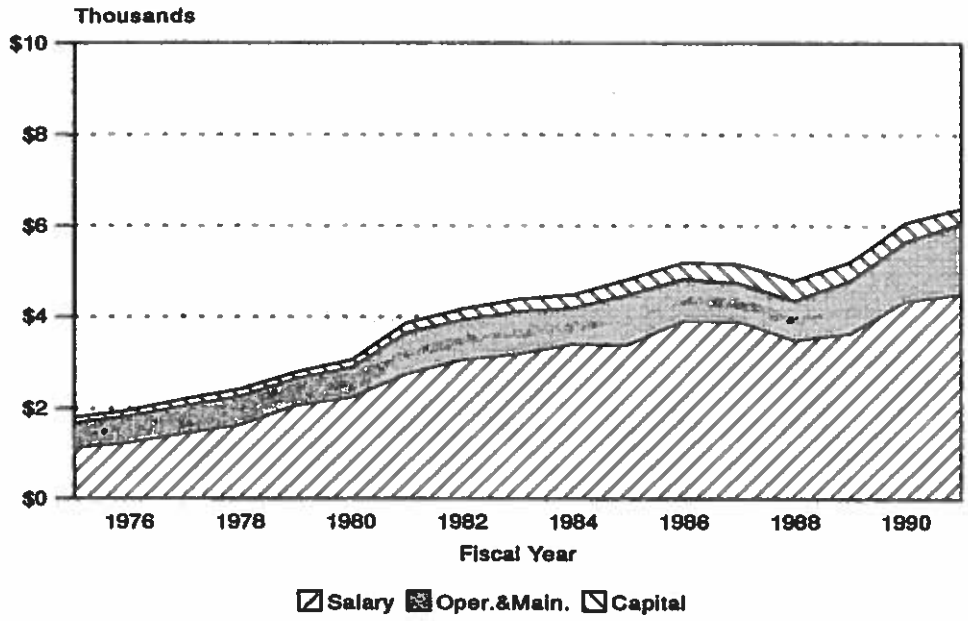


FIGURE 8:
INTERNATIONAL HYDROMETRIC STATION
ANNUAL UNIT COSTS



4.6 COST ESTIMATES: 1992-93

Changes affecting the 1992-93 Schedule A are outlined in sections 2.1.1, 2.1.2 and 3.3. The detailed computation of the 1992-93 Schedule D, estimated at $450 000, is contained in Appendix D.

APPENDIX A

DETAILED O&M EXPENDITURES,
VEHICLE OPERATION COSTS, and
COMPUTER OPERATION COSTS

DETAILED EXPENDITURE SUMMARY
1991–1992

LINE OBJECT NAME	LO #	TOTAL	001	303	304	305	306	307	308	310	313	316	317
TRAVEL													
Travel Expenses	0701	131134	19295	846	3866	55765	8049	12530	3387	19336	128	1404	6528
Government Confs Canada	0708	437	437										
Taxis HQ Area	0716	318				256	28	34					
Travel Training	0720	3728	3728										
Travel Non–Public Service	0722	5916	1458							4255		203	
Travel Exps OGCD's	0728	1747	1747										
Removal Travel Costs	0801	40635	40635										
Central Removal Services	0804	8670	8670										
Sub–Total		192585	75970	846	3866	56021	8077	12564	3387	23591	128	1607	6528
TRANSPORTATION AND POSTAGE													
Transporation of Goods	0901	1558		445		277	396	199	212		29		
Other Postal Service	0908	1684				1061	219	404					
Courier Service	0909	1300	128	614		43	72	195	180	7	47		14
Central Freight	0913	1755		1509			21	107		118			
Sub–Total		6297	128	2568	0	1381	708	905	392	125	76	0	14
TELEPHONES													
Bas Recur Serv Chgs Ext	1001	17338	9617			2988	411	1685			2637		
Bas Recur Serv Chgs GTA	1002	3338	581			99		2658					
Long Dist Chgs Ext	1003	6749	527			2951	66	1327		228	1534	116	
Long Dist Chgs GTA	1004	8105	6902			1203							
Extra Service Chgs Ext	1007	669	598			71							
Extra service Chgs GTA	1008	263	141				122						
Monthly Service Chgs Ext	1101	9089									9089		
Fax Costs	1103	51				42	4	5					
Radio Licences DOC	1104	1893				649	960	284					
Data Pac Com Lines C&P	1121	8287									8287		
NCCS Pub Pack Fix Chg GTA	1140	40						40					
NCCS Maintenance	1145	1						1					
Sub–Total		55823	18366	0	0	8003	1563	6000	0	228	21547	116	0
ADVERTISING AND PRINTING													
Advertising	1401	1066	504	348		84	29	101					
Pub Broch Etc DSS	1501	9				9						23	206
Publicatns DSS Dist Cent	1503	684	455									60	
Print Serv DSS	1510	60											
Other	1515	891	891									84	
Printing Manuals	1516	120	36									627	209
Print Serv Outside Resl	1519	6643				605	127	893	4182				
Visual Servs Acq Outside	1522	245				9		13		223			

LINE OBJECT NAME	LO #	TOTAL	001	303	304	305	306	307	308	310	313	316	317
Photographic Ser Photos	1537	525	109		20	123		52				221	
Sub–Total		10243	1995	348	20	830	158	1059	4182	223	0	1015	415
PROFESSIONAL & SPECIAL SERVICES													
Legal Services	1803	56	56										
Gauge Attend Serv	1825	3835			1230	2605							
Mngt Cons Exc DSS	1833	15500			15500								
EDP Consult Outside	1844	3750	750									3000	
DOTS Service Aquired	1851	505									505		
Stf Dev Tr PSC Ex Lgtr	1904	7222	7222										
Tui Fees Univ & Coll	1907	1405	1110	295									
Training Courses Pub Srvs	1908	664	664										
Training Consultant	1909	2562	1471									1091	
Train Fac St Hotels	1911	225	225										
Sub–Total		35724	11498	295	16730	2605	0	0	0	0	505	4091	0
TEMPORARY HELP SERVICE													
Contract Steno Clr Typ Serv	2001	10512	8812	1700		0							
Sub–Total		10512	8812	1700	0	0	0	0	0	0	0	0	0
OTHER SERVICES													
Laund Clean Rel Serv	2201	217				21	4	192					
EDP Serv Purch Oth Dept	2202	3104									3104		
EDP Services	2203	5183									2284		2899
Cntrct Admin DSS Serv Chg	2207	17020		440		4718	8132	1245		632	857		996
Brokerage Fees	2216	158				98						60	
Sto Warehouse Exc DSS	2219	6153				1988	427	538			335		2865
Garb Coll Exc Munic	2222	592	592										
Snoe & Ice Removal	2224	843	783					0		60			
Regist Seminars Workshops	2227	132	125										7
Conference Fee	2228	800	800										
Petty cash Pur Servs	2244	441	60	25		80		61		188	18		9
Srv N E S exc Gov Dept	2250	12972	12700							272			
Sub–Total		47615	15060	465	0	6905	8563	2036	0	1152	6598	60	6776
RENTALS													
Rental Lands	2501	8908					8908						
Photo Printing Equipment	2515	2303	2171			13		69				50	
Photo & Audio–Video Equip	2520	858	858										
Rent Mach Equip	2521	380				80				300			
Passenger Vehicles	2522	245					245						
Aircraft External Supplier	2526	126822					124715		2107				
Rent Bldg Off Admin	2531	2961	2961										
Rent Gas Cylinders	2538	2617				1829	653			135			

LINE OBJECT NAME	LO #	TOTAL	001	303	304	305	306	307	308	310	313	316	317
Rent Equip N E S	2539	435		300		41	94						
Sub–Total		145529	5990	300	0	1963	134615	69	2107	435	0	50	0
PURCHASED REPAIR													
Gen Purp Ind Machine	2801	425				333	52	40					
Air Cond. Refrig Equip	2804	2367								9	2358		
Elec Light Distr Cent Equip	2808	1929	1422			20					487		
Other Elec Equip Appl	2809	70									70		
Electronic Equip	2810	12				12							
Rsrch Scient Lab Equip	2813	7325				4078	1434	1813					
Sa San Alarm Sign Syst	2814	88	88										
Ser Ind Equip Vend Mach	2816	191				187				4			
Furniture Fixture	2819	1100	1100										
Underwater Equip	2820	232				232							
Other Equipment	2826	23				23							
Plumbing Equip Repairs	2827	37	37										
Telecom Equipment	2828	1859				1859							
EDP Equipment	2831	29171					1635				27536		
Off Mch Equip Repairs	2832	100	100										
Ships Boats	2834	295				181	89	25					
Rd Mot Vehicle	2839	7704	5672		6	276		69		1681			
Misc Vehicle	2840	175	75			100							
Oversnow Vehicle	2844	161	23			138							
Sub–Total		53264	8517	0	6	7439	3210	1947	0	1694	30451	0	0
BUILDING & STRUCTURES REPAIR													
Highway Rd St Const	2908	400					400						
Pow Trans Dist Line	2916	10				10							
Office Bldg	2930	775		175							600		
Garage Serv Stat	2931	30	30										
Tenant Serv DPW Revo Fund	2940	4260	4260										
PWC 15% Admin Charge	2941	639	639										
Sub–Total		6114	4929	175	0	10	400	0	0	0	600	0	0
PUBLIC UTILITY SERVICES													
Electrical Consumption	3201	55233				47966		7267					
Sub–Total		55233	0	0	0	47966	0	7267	0	0	0	0	0
PURCHASED MATERIALS													
Food Mat Food Prep	3301	2				2							
Topsoil Sand Gravel N G	3307	786								786			
Diesel Fuel	3315	108	108										
Propane	3316	835				132	647	56					
Automotive Gas	3319	40347	39951			282	30	48		36			

LINE OBJECT NAME	LO #	TOTAL	001	303	304	305	306	307	308	310	313	316	317
Aviation Fuel	3320	4884					4884						
Grease Oil Cleaners	3327	1936	1700	37	5	51	9			134			
Wood Fabric Materials	3331	120			24	32				64			
Paper, Paper Board	3332	1077	346	502			7				222		
Textile Fabric Materials	3333	136				129	3	4					
Chem & Related Materials	3334	456				279	63	73		41			
Gases Hyd Hel Ox Nitrogen	3337	3926				2463	1223	240					
Plastic, Bag/Sheet	3338	90					5			85			
Iron, Steel Alloys	3340	3380				890	7			2483			
Metal Fabricated Prod.	3344	1668	766	50		435	7	16		145	247		
Cement	3345	542				2	18	7		515			
Glass	3350	1165	1127					38					
Insulation Materials	3351	80								80			
Misc Fab	3357	5				5							
Stationary Off Supps SSC	3358	2429	1800			365					264		
Import Broker Fees	3365	33				15						18	
Protective Clothing	3403	2169				1646	234	196		93			
Footwear, Apparel&Acces	3404	4693				3817	436	440					
Toiletries	3407	474	467			7							
House Furnishing	3409	363	363										
Library Stock	3416	632	133			11					113	231	144
Audio Visual Mat Training	3418	74	10								64		
Subscriptions	3419	554	453								101		
Maps Charts	3420	14368			21	167				21			14159
Printed Matter OGCD	3423	106	106										
Station Off Supp	3425	4124	2342			238		955	3	360	20		206
Draft Art Supp	3426	193	164					29					
Telety Paper Tape	3427	15	15										
Photocopy Pap Chem	3431	222	222										
Data Proces Supp	3432	494	494										
Photographic Supplies	3433	168	19		11	67	10	55		6			
Contain cls Return	3437	352			20	152	109	24					47
Construction Materials	3439	6848	619		243	2885	534			2367			
Electric Power Cables	3340	139									139		
Paint and Painting Supplies	3345	952				487	313			152			
Hardware	3450	261	80			166	6	9					
Purch P Cash Inc Tax	3456	63				19	44						
Misc Prod Audio-Vis Bib	3460	9				9							
Sub-Total		101076	51285	589	324	14753	8589	2190	3	7368	1170	249	14556
PARTS & CONSUMABLE TOOLS													
General Purp Mach	3501	883				593	105	30		155			
Ht Air Cond Refrig Equip	3508	2637		250						1952	435		
Cook Equip Food	3509	16					16						
Plumb Equip, Fixt	3510	1325				675	583	58		9			
Elec Clight Dist Cont Equip	3513	2312	340			1150	3	3		684	132		
Batteries & Elect Equip	3514	4839			230	2019	1370	1104			116		
Lab Glassware & Supplies	3515	685		685									
Mea Cont Med Opt Inst	3516	21841	14602	153		5817	1190	4		75			
Signal & Safety Syst	3519	853	842			11							

LINE OBJECT NAME	LO #	TOTAL	001	303	304	305	306	307	308	310	313	316	317
Hand Tool Cutl	3520	8997				4116	1821	2217		843			
Oth Equipment Incl X-Ray	3522	398				398							
EDP Equipment	3527	2703				22					2061	620	
Elect_Auto Office Syst Eq	3531	36				36							
Other Office Equipment	3532	65	10			55							
Software Packages	3533	5736		50							4641	598	447
Ships Boats	3534	3					3						
Marine Equipment	3537	11				5	6						
Rd Mot Vehicles	3538	7860	6475			198				1187			
Rub. Tires & Tubes	3539	3895	3895										
Tractors Landscape Equip	3540	95	95										
Oversnow Vehicles & ATV's	3543	102				102							
Sub-Total		65292	26259	1138	230	15197	5097	3416	0	4905	7385	1218	447
OTHER EXPENDITURES													
Damage Claims	4710	111259	111259										
Ex Gratia Pay	4713	60				60							
Int Etc Chr Overd Acc	4719	516	15			24	460	5			12		
Pay Custom Duties	4726	58	58										
Vehicle Registration Fees	4731	2224	1412			812							
Departmental Awards	4733	26	26										
Sub-Total		114143	112770	0	0	896	460	5	0	0	12	0	0
SUB-TOTAL		899450	341579	8424	21176	163969	171438	37458	10071	39721	68472	8406	28736
EQUIPMENT REGISTRATION													
Capit Proj DPW Revol Fnd	2280	0											
Ht Air Cond. Refrig Equip	2313	0											
Scientific Equipment	2321	0											
Mea Cont Lab Inst Excx-ray	2322	0											
Srv Ind Equip Vend M/C	2332	0											
Furn, Fixt Exc DSS	2333	0											
Furn, Fixt DSS	2334	0											
Other EDP Equip	2357	0											
EDP Software	2361	0											
Rd Motor Vehicles	2371	0											
EQUIPMENT AQUISITION TOTAL		0	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL		899450	341579	8424	21176	163969	171438	37458	10071	39721	68472	8406	28736

VEHICLE OPERATING COSTS 1991-92*

Vehicle Type	Hydrometric Costs				Construction 310	Total Costs	Usage Vehicle-months	Average Cost/Month
	Normal 305	Remote 306	Int'l 307	Total Hydrometric				
Multi-purpose	$27 898	$2 182	$11 395	$41 475	$ 4 713	$46 188	198	$233.27
Light Truck	$ 6 891	$2 197	$2 953	$12 041	-	$12 041	60	$200.68
Med. Truck	-	-	-	-	$ 6 529	$ 6 529	12	$544.08
Heavy Truck	-	-	-	-	$ 4 126	$ 4 126	18	$229.22
TOTAL	$34 789	$4 379	$14 348	$53 516	$15 368	$68 844	288	-

* Data extracted from F.M.I.S. Cost Summary Report

WRB MINICOMPUTER COST SHARING: 1991-92

The determination of the annual shareable computer costs is based on an agreement made in 1984-85 when the WRB PDP-11/44 minicomputer system was put into use. Under this agreement, annual computer costs will be computed by two methods, and the lesser of the two values will be considered to be the sharable cost for that year. The two methods are as follows:

1. TACC = IRC + AOC + AMC

   where: TACC = the total (shareable) annual computing costs

   IRC = the imputed rental charges computed by amortizing the capital cost of the minicomputer system and peripherals over a 10 year life span.

   AOC = the annual operating costs

   AMC = the annual maintenance costs

2. TACC = the TACC from the previous fiscal year multiplied by the government price index for the current fiscal year.

In each fiscal year since 1984-85 the TACC computed by the second method has been lower. The product of the government price indices for the period 1983-84 to 1991-92 is 1.353.

METHOD 1.

a) Imputed Rental Charge (IRC):

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

Initial capital	= $182 800
year 1	= $ 18 280
New Capital (year 2)	= $ 29 624
year 2	= $ 18 280 + ($29 624 x 1/9) = $ 21 572
New Capital (year 3)	= $ 68 168
year 3	= $ 21 572 + ($68 168 x 1/8) = $ 30 093
New Capital (year 4)	= $ 3 575
year 4	= $ 30 093 + ($3 575 x 1/7) = $ 30 604
New Capital (year 5)	= $ 21 660
year 5	= $ 30 604 + ($21 660 x 1/6) = $ 34 214
New Capital (year 6)	= $ 10 753
year 6	= $ 34 214 + ($10 753 x 1/5) = $ 36 365
New Capital (year 7)	= $ 15 139
year 7	= $ 36 365 + ($15 139 x 1/4) = $ 40 150
New Capital (year 8)	= $ 24 818
year 8	= $ 40 150 + (24 818 x 1/3) = $ 48 423

b) Annual Operating Cost (AOC)

Host computer	$ 3 600.00
Storage of backup disks	$ 1 200.00
Telecommunication charges, rental	$ 21 592.12
Supplies - paper, ribbons, cables	$ 2 929.13
	$ 29 321.25

c) Annual Maintenance Cost (AMC)

PDP 11/44 computer	$ 14 408.64
MicroVax II (Prince Albert)	$ 4 005.60
Fire protection, power, air conditioning	$ 2 522.97
Plotter	--
Digitizer	$ 107.00
CITOH printer	$ 804.00
LA120 printers (Prince Albert, Shaunavon)	$ 1 062.00
Terminal repairs	--
Electrical,mechanical repairs	$ 1 224.45
	$ 24 134.66

d) Total Annual Computing Cost (TACC)

TACC = IRC + AOC + AMC
= $48 423.00 + $29 321.25 + $24 134.66 = $ 101 878.91

Method 2.

1983-84 to 1991-92 Inflation Index (Based on Government Current Expenditures on Goods and Services.)	= 1.353
1983-84 Shareable Cost	= $ 54 802
TACC = $ 54 802 x 1.353	= $ 74 147.11

Therefore the Total (Shareable) Annual Computing Cost for fiscal year 1991-92 equals the computing cost ceiling of $74 147.

WRB SHAREABLE COMPUTER EXPENDITURES 1991-92

A.	Mainframe		
	1. Information Systems Management Corp (formerly Westbridge)		$ 3 600.00
B.	Service Charges		
	1. Beaver Engineering		
	- air conditioning maintenance	$ 974.77	
	- other repairs to air conditioner	$ 958.72	
			$ 1 933.49
	2. Jo-Ad Industries		
	- power conditioner maintenance	$ 389.48	
	- repairs to hi-temperature control unit	$ 200.00	
			$ 589.48
	3. Digital Equipment Corporation		
	- PDP 11/44 maintenance	$ 14 408.64	
	- Prince Albert MicroVax maintenance	$ 4 005.60	
			$ 18 414.24
	4. Crown Store-All		
	- storage and delivery of computer tapes and disk packs		$ 1 200.00
	5. Gentian Electronics		
	- repairs to Prince Albert digitizer		$ 107.00
	6. Globe Electric		
	- wiring in the computer room		$ 582.45
	7. Righetti Construction		
	- install glass and locks in computer room doors		$ 642.00

8.	Dataforce (Sask Tel)			
	- C.ITOH 600 printer maintenance	$ 804.00		
	- LA120 printer maintenance - PA	$ 483.00		
	- LA120 printer maintenance - Shaunavon	$ 579.00		
			$ 1 866.00	
9.	Sask Tel			
	- Datapac rental (Regina and PA)	$ 6 415.20		
	- Datapac charges	$ 7 675.16		
	- rental of conditioned computer lines	$ 1 270.10		
	- rental of RJE line	$ 2 772.00		
	- rental of RDC line for DEC	$ 342.00		
	- long distance charges	$ 1 685.08		
	- Federal communications tax	$ 1 432.58		
			$ 21 592.12	
				$ 46 926.78

C.	Supplies			
1.	computer paper		$ 556.37	
2.	TK50 tapes		$ 447.60	
3.	Plotter pens		$ 77.04	
4.	RS232 cable for Prince Albert		$ 60.00	
5.	HP laser toner cartridges		$ 528.58	
6.	LN03 laser supplies		$ 852.71	
7.	A/B data switch		$ 19.00	
8.	DESTA, AUI cable for PDP		$ 387.83	
				$ 2 929.13
	TOTAL 1991-92 SHAREABLE OPERATING AND MAINTENANCE EXPENDITURES			$ 53 455.91

D. Capital and licences

Capital items purchased in 1991-92 to be included in the 1992-93 cost sharing calculations for the value of the mini-computer system.

1.	DHQ-11 and cab kit installed in PA MicroVax to add to ports	$ 3 717.13
2.	HP LaserJet III (Prince Albert)	$ 2 485.61
3.	DEC VT420 terminals (4)	$ 3 222.47
		$ 9 425.21

WRB NON-SHAREABLE COMPUTER EXPENDITURES 1991-92

A.	ISM - Charges			$ 1 946.00
B.	Services Charges			
	1. Digital			
	- Regina MicroVax and LN03 Maintenance		$ 8 014.92	
	2. Miscellaneous PC			
	- repair Regina PCs	$ 935.15		
	- repair Prince Albert PC	$ 259.01		
			$ 1 194.16	
				$ 9 209.08
C.	Supplies			
	1. Bernoulli disks		$ 308.00	
	2. Floppy disks		$ 104.00	
	3. Training video tapes		$ 64.09	
				$ 476.09
D.	Capital, software and software maintenance			
	1. Capital			
	- monitor for Zenith laptop	$ 380.08		
	- floppy drive installation	$ 176.55		
	- surge bars	$ 197.38		
	- serial port boards (4)	$ 278.20		
	- Microsoft serial mouse (7)	$ 786.45		
	- Dextronix 8 mb memory board	$ 1 230.50		
	- Dell PC 333D (2)	$ 12 064.18		
	- Dell PC 325 D (1)	$ 4 228.00		
	- Dell PC 320 SX (1)	$ 2 658.00		
			$ 21 999.34	

2.	Software			
	- Lotus 123 (4) (Computerland)	$ 1 990.00		
	- WordPerfect V5.1 (6) (Computerland)	$ 1 752.00		
	- ProComm V2.0 (Computerland)	$ 93.00		
	- Harvard Graphics (Computerland)	$ 459.00		
	- XTREE Pro Gold upgrade (4)	$ 394.99		
	- Axum	$ 416.40		
	- Harvard Graphics 2.301 (Microage)	$ 350.00		
	- Harvard Graphics upgrade	$ 478.29		
	- Harvard Graphics V3.0	$ 405.00		
	- Windows 3.0	$ 106.00		
	- Smarterm 420 for Windows	$ 195.00		
	- Norton Commander V3.0	$ 106.00		
	- ProComm Plus V2.0	$ 170.00		
	- WordPerfect upgrade to Windows	$ 89.89		
	- DOS 5.0 upgrade (6)	$ 447.40		
	- Norton Desktop for Windows V1.0	$ 103.00		
	- QEMM 386 V6.0 (2)	$ 139.90		
	- Dr Halo upgrade	$ 49.95		
			$ 7 745.82	
3.	Software maintenance			
	- ORACLE	$ 3 251.00		
	- SPANS	$ 1 425.24		
	- DISKEEPER	$ 288.75		
	- I/O Express	$ 236.25		
	- I/O Express - PA	$ 118.12		
			$ 5 219.36	
				$ 34 964.52
TOTAL WRB NON-SHAREABLE COMPUTER EXPENDITURES				$ 46 595.69

WRB TOTAL COMPUTER EXPENDITURES 1991-92 (Shareable and Non-Shareable)

A.	Mainframe			
	Shareable	$ 3 600.00		
	Non-Shareable	$ 1 946.00		
			$ 5 546.00	
B.	Service Charges			
	Shareable	$ 46 926.78		
	Non-Shareable	$ 9 209.08		
			$ 56 135.86	
C.	Supplies			
	Shareable	$ 2 929.13		
	Non-Shareable	$ 476.09		
			$ 3 405.22	
D	Capital and Licences and Software Maintenance			
	Shareable	$ 9 425.21		
	Non-Shareable	$ 34 964.52		
			$ 44,389.73	
WRB TOTAL COMPUTER EXPENDITURES 1991-92 = A + B + C + D				$ 109 476.87

APPENDIX B

STATION AND COST SUMMARY DATA

FOR INCLUSION IN

NATIONAL ANNUAL REPORT

Province: SASKATCHEWAN

TABLE 4
WATER QUANTITY SURVEYS
TOTAL PROGRAM COSTS & SHAREABLE COSTS FOR 1991-92
(× $1000)

Total Program Costs					Shareable Costs						
P/Yrs	Sal.	Oper.	Cap.	Total	P/Yrs	Sal.	Oper.	Const.	Total	F Share	P Share
34.0	1 608.2	896.7	273.2	2 778.1	20.13	878.0	585.1*	74.5	1 537.5	1 013.7	524.8

* Includes O&M and Capital Depreciation values $506 375 + $78 695 = $585 060

TABLE 5
WATER QUANTITY SURVEYS
SUMMARY OF SCHEDULES D/F - 1991-92

Streamflow & Water Level		Sediment		Total
Operation	Construction	Operation	Construction	
525 500	30 000	1 000	0	556 500

TABLE 6
WATER QUANTITY SURVEYS
COMPARISON - SCHEDULED & ACTUAL COSTS FOR 1991-92
(Dollars)

Salary & Operations		Construction		Total			Annual Payment Received	Receiv Minu Actua
Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Difference		
526 500	512 118	30 000	12 641	556 500	524 759	(31 741)	556 500**	31 74

** Surplus from 1990-91 = $21 466. Therefore Annual Payment Received = $535 034+$21 466 = $556 500

Province/Territory: SASKATCHEWAN

TABLE 1
WATER QUANTITY SURVEYS
GAUGING STATION DATA FOR 1991-92

No of Stations			Changes during 1990-91		Stn. Designation April 1, 1991			
April 1 90	April 1 91	Change	Added	Discontinued	Fed	F P	Prov	Contrib.
364	363	-1	0	1	* (1) 146	* 124	* 92	1

* Bracket Sediment Stations

TABLE 2
WATER QUANTITY SURVEYS
COMPARATIVE GAUGING STATION DATA April 1/75 to April 1, 1991

Federal Stations			F P Stations			Provincial Stations			Total Stations		
Apr 1 75	Apr 1 91	Chge	Apr 1 75	Apr 1 91	Chge	Apr 1 75	Apr 1 91	Chge	Apr 1/75	Apr 1 91	Chge
173	146	-27	106	124	+18	51	92	+42	330	362	+33

TABLE 3
WATER QUANTITY SURVEYS
DETAILED GAUGING STATION DATA 1991-92

F-1	F-2	F-3	F-4	Total F	FP-1	FP-2	FP-3	Total F/P	P-1	P-2	Total P	Contributed	Total-All
15	44	66	21	146	0	22	102	124	78	14	92	1	363

Bracket Sediment Stations in all catagories

APPENDIX C

MEMORANDUM OF AGREEMENT

MEMORANDUM OF AGREEMENT

MEMORANDUM OF AGREEMENT

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

BETWEEN:

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

OF THE FIRST PART

-and-

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

OF THE SECOND PART.

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

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

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

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

DEFINITIONS

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

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

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

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

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

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

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

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

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

ARTICLE I

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

OPERATIONAL CONSIDERATIONS

ARTICLE II

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

ARTICLE III

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

ARTICLE IV

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

ARTICLE V

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

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

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

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

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

FINANCIAL CONSIDERATIONS

ARTICLE VI

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

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

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

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

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

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

ARTICLE VII

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

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

ARTICLE VIII

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

ARTICLE IX

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

ARTICLE X

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

CO-OPERATION

ARTICLE XI

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

ARTICLE XII

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

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

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

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

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

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

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

ADMINISTRATIVE ARRANGEMENTS

ARTICLE XIII

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

IMPLEMENTATION

ARTICLE XIV

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

PERIOD OF AGREEMENT

ARTICLE XV

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

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

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

Signed on behalf of Canada)
by the Honourable Jeanne Sauve,)
Minister of Environment)

IN THE PRESENCE OF)

Signed on behalf of the Province of)
Saskatchewan by the Honourable)
Neil E. Byers, Minister of)
Environment)

IN THE PRESENCE OF)

SCHEDULE A: APRIL 1, 1990

Schedule A of the Memorandum of Agreement identifies the operational and financial responsibility for hydrometric stations that comprise the water quantity network and are active on April 1 of each year. The Schedule also shows the type of data collected (flow, water level, sediment) and the period of operation (seasonal or annual). Decisions regarding changes to the Schedule are made by the Coordinating Committee with reference to the national designation guidelines for station classification. The Saskatchewan hydrometric network existing as of April 1, 1990 is documented in this section.

APR 01 1991

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
F1 - FEDERAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05GG005	ANGLIN LAKE RESERVOIR	WSC	12L			PRINCE ALBERT
2.	06CA008	CREAN LAKE AT THE WARDEN STATION	WSC	8L			PRINCE ALBERT
3.	05HA070	DOWNIE LAKE INFLOW CANAL	WSC	8Q			REGINA
4.	05HA064	DOWNIE LAKE RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
5.	05JF008	FAHLMAN CREEK NEAR DAVIN	WSC	8Q			REGINA
6.	05HA069	GAP CREEK BELOW DOWNIE LAKE DIVERSION	WSC	8Q			REGINA
7.	05HA074	HARRIS RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
8.	05HA063	JUNCTION RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
9.	06CA007	KINGSMERE LAKE AT THE OUTLET STRUCTURE	WSC	8L			PRINCE ALBERT
10.	07MC003	LAKE ATHABASCA NEAR CRACKINGSTONE POINT	WSC	12L		REMOTE	PRINCE ALBERT
11.	05HA076	MAPLE CREEK BELOW JUNCTION RESERVOIR	WSC	8Q			REGINA
12.	05JC004	RUSHLAKE CREEK ABOVE HIGHFIELD RESERVOIR	WSC	8Q			REGINA
13.	05GG007	SPRUCE RIVER BELOW ANGLIN LAKE RESERVOIR	WSC	12Q			PRINCE ALBERT
14.	05GG006	SPRUCE RIVER DIVERSION TO EMMA LAKE	WSC	8Q			PRINCE ALBERT
15.	06CA002	WASKESIU LAKE AT WASKESIU LAKE	WSC	8L			PRINCE ALBERT

APR 01 1991

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1991-92
F1 - FEDERAL DEPARTMENTAL PROGRAMS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	1	0.40	0.40
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		1		0.40
NORMAL ACCESS				
	8L	6	0.25	1.50
	12L	1	0.40	0.40
	8Q	6	0.75	4.50
	12Q	1	1.00	1.00
TOTAL		14		7.40
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		15		7.80

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
F2 - INTERPROVINCIAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05MD004	ASSINIBOINE RIVER AT KAMSACK	WSC	12Q			REGINA
2.	05JE010	AVONLEA INDEX RESERVOIR	WSC	8L			REGINA
3.	05JE007	AVONLEA RESERVOIR NEAR AVONLEA	WSC	8L			REGINA
4.	11AB117	BATTLE CREEK AT ALBERTA BOUNDARY	WSC	8Q			REGINA
5.	05JF006	BOGGY CREEK NEAR LUMSDEN	WSC	8Q			REGINA
6.	05AH001	BOXELDER CREEK NEAR WALSH	WSC	8Q			CALGARY
7.	05HF007	BRODERICK IRRIGATION MAIN CANAL BELOW PUMPING STATION	WSC	8Q			REGINA
8.	05JG009	BUFFALO POUND LAKE AT PUMPING STATION	WSC	12L			REGINA
9.	05KH007	CARROT RIVER NEAR TURNBERRY	WSC	12Q			WINNIPEG
10.	06EA002	CHURCHILL RIVER AT SANDY BAY	WSC	12Q		REMOTE	PRINCE ALBERT
11.	05JM006	CROOKED LAKE NEAR GRAYSON	WSC	12L			REGINA
12.	05JM015	CUTARM CREEK NEAR SPY HILL	WSC	8Q			REGINA
13.	05KH011	DRAGLINE CHANNEL NEAR SQUAW RAPIDS	WSC	12Q			PRINCE ALBERT
14.	05JK005	ECHO LAKE AT FISH HATCHERY	WSC	12L			REGINA
15.	05JM010	EKAPO CREEK NEAR MARIEVAL	WSC	8Q			REGINA
16.	05JG006	ELBOW DIVERSION CANAL AT DROP STRUCTURE	WSC	12Q			REGINA
17.	05JL002	INDIANHEAD CREEK NEAR INDIAN HEAD	WSC	8Q	X		REGINA
18.	05JL004	KATEPWA LAKE AT KATEPWA BEACH	WSC	12L			REGINA
19.	05HF003	LAKE DIEFENBAKER AT GARDINER DAM	WSC	12L			REGINA
20.	05JH004	LAST MOUNTAIN LAKE AT ROWAN'S RAVINE	WSC	12L			REGINA
21.	11AB082	LODGE CREEK AT ALBERTA BOUNDARY	WSC	8Q			REGINA
22.	05JF013	LUMSDEN INDEX RESERVOIR	WSC	8L			REGINA
23.	05JE006	MOOSE JAW RIVER NEAR BURDICK	WSC	12Q	X		REGINA
24.	05EF001	NORTH SASKATCHEWAN RIVER NEAR DEER CREEK	WSC	12Q			PRINCE ALBERT
25.	05NE003	PIPESTONE CREEK ABOVE MOOSOMIN LAKE	WSC	8Q			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
F2 - INTERPROVINCIAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
26.	05JG004	QU'APPELLE RIVER ABOVE BUFFALO POUND LAKE	WSC	12Q			REGINA
27.	05JM013	QU'APPELLE RIVER AT HYDE	WSC	8Q			REGINA
28.	05JK002	QU'APPELLE RIVER BELOW CRAVEN DAM	WSC	12Q			REGINA
29.	05JL001	QU'APPELLE RIVER BELOW KATEPWA LAKE	WSC	12Q			REGINA
30.	05JK007	QU'APPELLE RIVER BELOW LOON CREEK	WSC	12Q	X		REGINA
31.	05JG007	QU'APPELLE RIVER BELOW MOOSE JAW RIVER	WSC	12Q			REGINA
32.	05JF001	QU'APPELLE RIVER NEAR LUMSDEN	WSC	12Q			REGINA
33.	05JM001	QU'APPELLE RIVER NEAR WELBY	WSC	12Q	X		REGINA
34.	05LC001	RED DEER RIVER NEAR ERWOOD	WSC	12Q	X		PRINCE ALBERT
35.	05HD033	REID LAKE NEAR DUNCAIRN	WSC	12L			REGINA
36.	06DD002	REINDEER RIVER ABOVE DEVIL RAPIDS	WSC	12Q		REMOTE	PRINCE ALBERT
37.	05JG013	RIDGE CREEK NEAR BRIDGEFORD	WSC	8Q			REGINA
38.	05JM007	ROUND LAKE NEAR WHITEWOOD	WSC	12L			REGINA
39.	05KD003	SASKATCHEWAN RIVER BELOW TOBIN LAKE	WSC	12Q			PRINCE ALBERT
40.	05JH007	SILTON INDEX RESERVOIR	WSC	8L			REGINA
41.	05JM019	STOCKHOLM INDEX RESERVOIR	WSC	8L			REGINA
42.	05HD034	SWIFT CURRENT CANAL AT SWIFT CURRENT	WSC	8Q			REGINA
43.	05KD004	TOBIN LAKE AT THE SPILLWAY	WSC	12L			PRINCE ALBERT
44.	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
1991-92
F2 - INTERPROVINCIAL WATERS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	2	1.00	2.00
TOTAL		2		2.00
NORMAL ACCESS				
	8L	5	0.25	1.25
	12L	9	0.40	3.60
	8Q	12	0.75	9.00
	12Q	16	1.00	16.00
TOTAL		42		29.85
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		44		31.85

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
F3 - INTERNATIONAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	11AB095	ADAMS LAKE	WSC	8L			REGINA
2.	11AB089	ALTAWAN RESERVOIR NEAR GOVENLOCK	WSC	8L			REGINA
3.	05NC006	ARCOLA INDEX RESERVOIR	WSC	8L			REGINA
4.	11AB027	BATTLE CREEK AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
5.	11AB101	BATTLE CREEK BELOW NASHLYN PROJECT	WSC	8Q			REGINA
6.	11AB118	BATTLE CREEK BELOW WILSONS WEIR	WSC	8Q			REGINA
7.	11AB096	BATTLE CREEK NEAR CONSUL	WSC	8Q			REGINA
8.	11AF005	BEAVER CREEK NEAR INTERNATIONAL BOUNDARY	WSC	12Q			REGINA
9.	11AC064	BELANGER CREEK DIVERSION TO CYPRESS LAKE	WSC	8Q			REGINA
10.	05NB012	BOUNDARY RESERVOIR NEAR ESTEVAN	WSC	12L			REGINA
11.	11AE013	COOKSON RESERVOIR NEAR CORONACH	WSC	12L			REGINA
12.	11AC037	CYPRESS LAKE	WSC	8L			REGINA
13.	11AC060	CYPRESS LAKE EAST OUTFLOW CANAL	WSC	8Q			REGINA
14.	11AB078	CYPRESS LAKE WEST INFLOW CANAL	WSC	8Q			REGINA
15.	11AB085	CYPRESS LAKE WEST INFLOW CANAL DRAIN	WSC	8Q			REGINA
16.	11AB077	CYPRESS LAKE WEST OUTFLOW CANAL	WSC	8Q			REGINA
17.	05NB029	DEAD LAKE PROJECT - SOURIS RIVER CHANNEL	WSC	8L			REGINA
18.	05NB022	DEAD LAKE RESERVOIR NEAR MIDALE	WSC	8L			REGINA
19.	11AC073	DENNIEL CREEK EAST TRIBUTARY NEAR VAL MARIE	WSC	8Q			REGINA
20.	11AC025	DENNIEL CREEK NEAR VAL MARIE	WSC	8Q			REGINA
21.	11AE003	EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY	WSC	12Q			REGINA
22.	11AC052	EASTEND CANAL	WSC	8Q			REGINA
23.	11AC055	EASTEND RESERVOIR	WSC	8L			REGINA
24.	11AC023	FRENCHMAN RIVER AT 50-MILE	WSC	8Q			REGINA
25.	11AC041	FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY	WSC	8Q	X		REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
F3 - INTERNATIONAL WATERS

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

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
F3 - INTERNATIONAL WATERS

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

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1991-92
F3 - INTERNATIONAL WATERS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
INTERNATIONAL				
	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	39	0.75	29.25
	12Q	8	1.00	8.00
TOTAL		66		43.00
GRAND TOTAL		66		42.60

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
F4 - NATIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	06CA004	BIGSTONE LAKE NEAR LA RONGE	WSC	12L			PRINCE ALBERT
2.	05KC001	CARROT RIVER NEAR SMOKY BURN	WSC	12Q			PRINCE ALBERT
3.	07LC002	CHIPMAN RIVER ABOVE BLACK LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
4.	06CD002	CHURCHILL RIVER ABOVE OTTER RAPIDS	WSC	12Q			PRINCE ALBERT
5.	06BB003	CHURCHILL RIVER NEAR PATUANAK	WSC	12Q		REMOTE	PRINCE ALBERT
6.	07CD006	CLEARWATER RIVER AT OUTLET OF LLOYD LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
7.	07LD001	CREE LAKE AT CABLE BAY	WSC	12L		REMOTE	PRINCE ALBERT
8.	07LD002	CREE RIVER AT OUTLET OF WAPATA LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
9.	06BA002	DILLON RIVER BELOW DILLON LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
10.	07LE002	FOND DU LAC RIVER AT OUTLET OF BLACK LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
11.	06DA004	GEIKIE RIVER BELOW WHEELER RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
12.	07LE003	GREASE RIVER BELOW FONTAINE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
13.	06BD001	HAULTAIN RIVER ABOVE NORBERT RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
14.	07MB001	MACFARLANE RIVER AT OUTLET OF DAVY LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
15.	06CA001	MONTREAL RIVER AT OUTLET OF BIGSTONE LAKE	WSC	12Q			PRINCE ALBERT
16.	05GG001	NORTH SASKATCHEWAN RIVER AT PRINCE ALBERT	WSC	12Q	X		PRINCE ALBERT
17.	05KJ014	PASQUIA RIVER AT HIGHWAY NO. 9	WSC	8Q			PRINCE ALBERT
18.	07LC003	PORCUPINE RIVER AT OUTLET OF GROVE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
19.	05HH001	SOUTH SASKATCHEWAN RIVER AT ST. LOUIS	WSC	12Q			PRINCE ALBERT
20.	05HD036	SWIFT CURRENT CREEK BELOW ROCK CREEK	WSC	12Q			REGINA
21.	06DA001	WOLLASTON LAKE AT ROSS CHANNEL	WSC	12L		REMOTE	PRINCE ALBERT

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1991-92
F4 - NATIONAL WATER QUANTITY INVENTORY
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	2	0.40	0.80
	8Q	0	0.75	0.00
	12Q	11	1.00	11.00
TOTAL		13		11.80
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	1	0.40	0.40
	8Q	1	0.75	0.75
	12Q	6	1.00	6.00
TOTAL		8		7.15
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		21		18.95

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1991-92
FP1 - FEDERAL-PROVINCIAL AGREEMENTS
UNIT SUMMARY

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

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
FP2 - RIVER BASIN MANAGEMENT

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

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1991-92
FP2 - RIVER BASIN MANAGEMENT
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	1	0.40	0.40
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		1		0.40
NORMAL ACCESS				
	8L	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	9	0.75	6.75
	12Q	5	1.00	5.00
TOTAL		21		14.25
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		22		14.65

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
1.	06AD011	ALCOTT CREEK ABOVE MEADOW LAKE	WSC	8Q			PRINCE ALBERT
2.	05HC005	ANTELOPE CREEK NEAR CABRI	WSC	8Q			REGINA
3.	05NF010	ANTLER RIVER NEAR WAUCHOPE	WSC	8Q	X		REGINA
4.	05JH001	ARM RIVER NEAR BETHUNE	WSC	8Q			REGINA
5.	05MC001	ASSINIBOINE RIVER AT STURGIS	WSC	8Q			REGINA
6.	05KF001	BALLANTYNE RIVER ABOVE BALLANTYNE BAY	WSC	12Q			PRINCE ALBERT
7.	05FF001	BATTLE RIVER AT BATTLEFORD	WSC	8Q	X		PRINCE ALBERT
8.	05HA003	BEAR CREEK NEAR PIAPOT	WSC	8Q			REGINA
9.	06AG001	BEAVER RIVER BELOW WATERHEN RIVER	WSC	12Q			PRINCE ALBERT
10.	06AD001	BEAVER RIVER NEAR DORINTOSH	WSC	12Q	X		PRINCE ALBERT
11.	05EF005	BIG GULLY CREEK NEAR MAIDSTONE	WSC	8Q	X		PRINCE ALBERT
12.	05MA011	BIRCH CREEK NEAR ELFROS	WSC	8Q			PRINCE ALBERT
13.	05EG006	BIRLING CREEK NEAR PAYNTON	WSC	8Q			PRINCE ALBERT
14.	05HA015	BRIDGE CREEK AT GULL LAKE	WSC	8Q			REGINA
15.	05HG002	BRIGHTWATER CREEK NEAR KENASTON	WSC	8Q			REGINA
16.	05KB005	BURNTOUT BROOK NEAR ARBORFIELD	WSC	8Q	X		PRINCE ALBERT
17.	06BB005	CANOE RIVER NEAR BEAUVAL	WSC	12Q		REMOTE	PRINCE ALBERT
18.	05KB003	CARROT RIVER NEAR ARMLEY	WSC	8Q	X		PRINCE ALBERT
19.	06BA001	CHURCHILL LAKE AT BUFFALO NARROWS	WSC	12L		REMOTE	PRINCE ALBERT
20.	05JF011	COTTONWOOD CREEK NEAR LUMSDEN	WSC	8Q	X		REGINA
21.	05HF014	CREIGHTON TRIBUTARY NEAR TOTNES	WSC	8Q			REGINA
22.	05HH002	CROMARTY CREEK NEAR BIRCH HILLS	WSC	8Q			PRINCE ALBERT
23.	05MB006	CROOKED HILL CREEK NEAR CANORA	WSC	8Q			REGINA
24.	05EG004	CRYSTAL CREEK NEAR IFFLEY	WSC	8Q			PRINCE ALBERT
25.	07CD007	DESCHARME RIVER BELOW DUPRE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
26.	06AG002	DORE RIVER NEAR THE MOUTH	WSC	12Q		REMOTE	PRINCE ALBERT
27.	07MA003	DOUGLAS RIVER NEAR CLUFF LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
28.	05GC006	EAGLE CREEK NEAR ENVIRON	WSC	8Q	X		PRINCE ALBERT
29.	05LB002	ETOMAMI RIVER NEAR BERTWELL	WSC	8Q	X		PRINCE ALBERT
30.	05GA007	EYEHILL CREEK NEAR MACKLIN	WSC	8Q			PRINCE ALBERT
31.	05LB007	FIR RIVER NEAR HUDSON BAY	WSC	12Q			PRINCE ALBERT
32.	06CE001	FOSTER RIVER ABOVE CHURCHILL RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
33.	05NF013	GAINSBOROUGH CREEK NEAR STORTHOAKS	WSC	8Q			REGINA
34.	05GG010	GARDEN RIVER NEAR HENRIBOURG	WSC	8Q			PRINCE ALBERT
35.	05NA005	GIBSON CREEK NEAR RADVILLE	WSC	8Q			REGINA
36.	05KA009	GOOSEHUNTING CREEK NEAR BEATTY	WSC	8Q			PRINCE ALBERT
37.	11AE010	HAY MEADOW CREEK NEAR LISIEUX	WSC	8Q			REGINA
38.	05MA012	IRONSPRING CREEK NEAR WATSON	WSC	8Q			PRINCE ALBERT
39.	05JG014	ISKWAO CREEK NEAR CRAIK	WSC	8Q			REGINA
40.	05NB014	JEWEL CREEK NEAR GOODWATER	WSC	8Q			REGINA
41.	05JK004	JUMPING DEER CREEK NEAR LIPTON	WSC	8Q			REGINA
42.	06BB004	KEELEY RIVER AT OUTLET OF KEELEY LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
43.	05HH003	KOHLESCHMIDT CREEK NEAR ROSTHERN	WSC	8Q			PRINCE ALBERT
44.	05JD004	LAKE OF THE RIVERS WEST INFLOW	WSC	8Q			REGINA
45.	05JJ003	LANIGAN CREEK ABOVE BOULDER LAKE	WSC	8Q			REGINA
46.	05KB006	LEATHER RIVER NEAR STAR CITY	WSC	8Q			PRINCE ALBERT
47.	05JH005	LEWIS CREEK NEAR IMPERIAL	WSC	8Q			REGINA
48.	05NF006	LIGHTNING CREEK NEAR CARNDUFF	WSC	8Q			REGINA
49.	05MC003	LILIAN RIVER NEAR LADY LAKE	WSC	8Q			REGINA
50.	05LB004	LOISELLE CREEK NEAR HUDSON BAY	WSC	8Q			PRINCE ALBERT

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
51.	05NA004	LONG CREEK NEAR MAXIM	WSC	8Q			REGINA
52.	05HF005	MACDONALD CREEK NEAR BOUNTY	WSC	8Q			REGINA
53.	05MA021	MAGNUSSON CREEK NEAR WYNYARD	WSC	8Q			PRINCE ALBERT
54.	06AD007	MAKWA RIVER AT RAPID VIEW	WSC	8Q			PRINCE ALBERT
55.	05LE011	MALONECK CREEK NEAR PELLY	WSC	8Q			REGINA
56.	05JA003	MCDONALD CREEK NEAR MCCORD	WSC	8Q	X		REGINA
57.	05HF015	MCDONALD TRIBUTARY NEAR TOTNES	WSC	8Q			REGINA
58.	05EF004	MONNERY RIVER NEAR PARADISE HILL	WSC	8Q			PRINCE ALBERT
59.	05JE001	MOOSE JAW RIVER ABOVE THUNDER CREEK	WSC	8Q			REGINA
60.	05ND004	MOOSE MOUNTAIN CREEK NEAR OXBOW	WSC	8Q	X		REGINA
61.	05JB007	MOSQUITO CREEK NEAR PAMBRUN	WSC	8Q			REGINA
62.	06BC001	MUDJATIK RIVER NEAR FORCIER LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
63.	05JB004	NOTUKEU CREEK ABOVE ADMIRAL RESERVOIR	WSC	8Q			REGINA
64.	05GD002	OSCAR CREEK NEAR KRYDOR	WSC	8Q			PRINCE ALBERT
65.	07LE004	OTHERSIDE RIVER AT OUTLET OF MERCREDI LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
66.	06EA007	PAGATO RIVER AT OUTLET OF PAGATO LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
67.	05JL005	PHEASANT CREEK NEAR ABERNETHY	WSC	8Q	X		REGINA
68.	05JA004	PINTO CREEK NEAR WOODROW	WSC	8Q			REGINA
69.	07LD003	PIPESTONE RIVER BELOW ROTARIU LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
70.	05MA020	QUILL CREEK NEAR QUILL LAKE	WSC	8Q			PRINCE ALBERT
71.	05MA025	RANCH CREEK ABOVE RANCH LAKE	WSC	8Q			PRINCE ALBERT
72.	05LB005	RED DEER RIVER NEAR STEEN	WSC	8Q			PRINCE ALBERT
73.	05JJ009	SALINE CREEK NEAR NOKOMIS	WSC	8Q			REGINA
74.	05LB006	SHAND CREEK NEAR DILLABOUGH	WSC	8Q			PRINCE ALBERT
75.	05GF001	SHELL BROOK NEAR SHELLBROOK	WSC	8Q			PRINCE ALBERT

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
76.	05ME007	SMITH CREEK NEAR MARCHWELL	WSC	8Q			REGINA
77.	06CC001	SMOOTHSTONE RIVER BELOW EMMELINE LAKE	WSC	12Q			PRINCE ALBERT
78.	05HE001	SNAKEBITE CREEK NEAR BEECHY	WSC	8Q			REGINA
79.	05NB017	SOURIS RIVER NEAR HALBRITE	WSC	8Q	X		REGINA
80.	05MB007	SPIRIT CREEK NEAR BUCHANAN	WSC	8Q			REGINA
81.	05MD010	STONY CREEK NEAR KAMSACK	WSC	8Q	X		REGINA
82.	05MC002	STONY CREEK NEAR STENEN	WSC	8Q			REGINA
83.	05GF002	STURGEON RIVER NEAR PRINCE ALBERT	WSC	8Q	X		PRINCE ALBERT
84.	05KG002	STURGEON-WEIR RIVER AT OUTLET OF AMISK LAKE	WSC	12Q			PRINCE ALBERT
85.	05LE008	SWAN RIVER NEAR NORQUAY	WSC	12Q	X		REGINA
86.	05HD039	SWIFT CURRENT CREEK NEAR LEINAN	WSC	12Q	X		REGINA
87.	05JG012	THUNDER CREEK NEAR DARMODY	WSC	8Q			REGINA
88.	06DB003	THYME HILL RIVER BELOW MACKENZIE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
89.	05KE002	TORCH RIVER NEAR LOVE	WSC	12Q			PRINCE ALBERT
90.	05EG005	TURTLELAKE RIVER NEAR TURTLEFORD	WSC	8Q			PRINCE ALBERT
91.	05JF004	WASCANA CREEK NEAR SEDLEY	WSC	8Q			REGINA
92.	07LB001	WATERBURY LAKE AT CREW CABIN	WSC	12L		REMOTE	PRINCE ALBERT
93.	07LB002	WATERFOUND RIVER BELOW UNKNOWN LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
94.	06AF005	WATERHEN RIVER NEAR GOODSOIL	WSC	12Q			PRINCE ALBERT
95.	06DC001	WATHAMAN RIVER BELOW WATHAMAN LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
96.	06DA005	WHEELER RIVER BELOW RUSSELL LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
97.	05KE005	WHITE FOX RIVER NEAR GARRICK	WSC	8Q			PRINCE ALBERT
98.	05MB003	WHITESAND RIVER NEAR CANORA	WSC	8Q			REGINA
99.	07MA004	WILLIAM RIVER ABOVE CARSWELL RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
100.	05MB005	WILLOW BROOK AT WILLOWBROOK	WSC	8Q			REGINA

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SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
FP3 - REGIONAL WATER QUANTITY INVENTORY

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

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1991-92
FP3 - REGIONAL WATER QUANTITY INVENTORY
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	2	0.40	0.80
	8Q	0	0.75	0.00
	12Q	15	1.00	15.00
TOTAL		17		15.80
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	75	0.75	56.25
	12Q	10	1.00	10.00
TOTAL		85		66.25
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		102		82.05

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

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

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

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

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
51.	06AD008	MORIN CREEK NEAR MEADOW LAKE	WSC	8Q			PRINCE ALBERT
52.	06AE003	MORIN LAKE NEAR VICTOIRE	SWC	8L			REGINA
53.	05GB004	MUDDY LAKE INFLOW NEAR REVENUE	WSC	8Q			PRINCE ALBERT
54.	06CB003	NEMEIBEN LAKE NEAR LA RONGE	SWC	8L			REGINA
55.	06AE001	NORBURY CREEK NEAR SPIRITWOOD	WSC	8Q			PRINCE ALBERT
56.	05GC007	OPUNTIA LAKE WEST INFLOW	WSC	8Q			REGINA
57.	05LD003	OVERFLOWING RIVER NEAR HUDSON BAY	WSC	8Q			PRINCE ALBERT
58.	05KG009	PELICAN LAKE AT PELICAN NARROWS	SWC	8L			REGINA
59.	05LA004	PIPESTONE CREEK NEAR ROSE VALLEY	WSC	8Q			PRINCE ALBERT
60.	05LB010	PRAIRIE RIVER NEAR PRAIRIE RIVER	WSC	8Q			PRINCE ALBERT
61.	05MA024	RANCH LAKE NEAR ST JAMES	SWC	8L			REGINA
62.	05LA005	RED DEER RIVER NEAR ARCHERWILL	WSC	8Q			PRINCE ALBERT
63.	05GD003	REDBERRY LAKE NEAR KRYDOR	SWC	8L			REGINA
64.	05MA016	ROMANCE CREEK NEAR WATSON	WSC	8Q			PRINCE ALBERT
65.	05JG001	SANDY CREEK NEAR CARON	WSC	8Q			REGINA
66.	05GF004	SHELL LAKE NEAR SHELL LAKE	SWC	8L			REGINA
67.	05HC003	SNIPE LAKE NORTH INFLOW	WSC	8Q			REGINA
68.	05NB031	SOURIS RIVER NEAR BECHARD	WSC	8Q			REGINA
69.	05NB030	SOURIS RIVER NEAR MCTAGGART	WSC	8Q			REGINA
70.	05GF003	STURGEON LAKE NEAR PRINCE ALBERT	SWC	8L			REGINA
71.	05EG009	TURTLE LAKE NEAR GLASLYN	SWC	8L			REGINA
72.	05HF022	UNNAMED CREEK NEAR CUTBANK	WSC	8Q			REGINA
73.	05KA012	WAKAW LAKE NEAR WAKAW	SWC	8L			REGINA
74.	05KA010	WALDSEA LAKE NEAR HUMBOLDT	SWC	8L			REGINA
75.	06AF007	WATERHEN LAKE NEAR DORINTOSH	SWC	8L			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
76.	05ND008	WHITE BEAR (CARLYLE) LAKE NEAR CARLYLE	WSC	BL			REGINA
77.	05JC006	WIWA CREEK NEAR ST. BOSWELLS	WSC	BQ			REGINA
78.	05MB014	YORK LAKE NEAR YORKTON	SWC	BL			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1991-92
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
NORMAL ACCESS				
	8L	7	0.25	1.75
	12L	0	0.40	0.00
	8Q	33	0.75	24.75
	12Q	1	1.00	1.00
TOTAL		41		27.50
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		41		27.50

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
P2 - SPECIFIC PURPOSE MONITORING

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

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1991-92
P2 - SPECIFIC PURPOSE MONITORING
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	1	0.40	0.40
	8Q	0	0.75	0.00
	12Q	3	1.00	3.00
TOTAL		4		3.40
NORMAL ACCESS				
	8L	3	0.25	0.75
	12L	1	0.40	0.40
	8Q	5	0.75	3.75
	12Q	0	1.00	0.00
TOTAL		9		4.90
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		13		8.30

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1991-92
DATA CONTRIBUTED BY SASKATCHEWAN
UNIT SUMMARY

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

APR 01 1991

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1991-92
DATA CONTRIBUTED BY OTHER AGENCY

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

APR 01 1991

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1991-92
DATA CONTRIBUTED BY OTHER AGENCY
UNIT SUMMARY

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

APR 01 1991

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1991-92

CLASSIFICATION	TYPE	NO. OF STATIONS	CONVERSION	UNITS
FEDERAL				
REMOTE ACCESS	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	13	1.00	13.00
		16		14.20
NORMAL ACCESS	8L	11	0.25	2.75
	12L	11	0.40	4.40
	8Q	19	0.75	14.25
	12Q	23	1.00	23.00
		64		44.40
INTERNATIONAL	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	39	0.75	29.25
	12Q	8	1.00	8.00
		66		42.60
TOTAL		146		101.20
FEDERAL-PROVINCIAL				
REMOTE ACCESS	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	15	1.00	15.00
		18		16.20
NORMAL ACCESS	8L	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	84	0.75	63.00
	12Q	15	1.00	15.00
		106		80.50
TOTAL		124		96.70
PROVINCIAL				
REMOTE ACCESS	8L	0	0.25	0.00
	12L	1	0.40	0.40
	8Q	0	0.75	0.00
	12Q	3	1.00	3.00
		4		3.40
NORMAL ACCESS	8L	10	0.25	2.50
	12L	1	0.40	0.40
	8Q	38	0.75	28.50
	12Q	1	1.00	1.00
		50		32.40
TOTAL		54		35.80
GRAND TOTAL		324		233.70

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: 1991-92

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

SCHEDULE D - MEMORANDUM OF AGREEMENT

SASKATCHEWAN HYDROMETRIC SURVEYS

for

1991-92

AMENDED

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 1991-92 TO BE PAID TO CANADA BY SASKATCHEWAN

		Operation	Construction	Total
a)	Streamflow and Water Level Installations	525 500	30 000	555 500
b)	Sediment Installations	1 000	---	1 000
c)	Rafferty/Alameda Project Water Quantity Monitoring Network	---	161 000	161 000
	Total	526 500	191 000	717 500

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Administrator for Saskatchewan

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APPENDIX D

ESTIMATED COSTS OF SCHEDULE D: 1992-93

ESTIMATED COST OF SCHEDULE D - SASKATCHEWAN: 1992-93

Cost estimates for 1992-93 were prepared in a different manner than in previous years because Saskatchewan would be assuming the operation of all Normal Access Provincial (P1 and P2) stations on July 1, 1992. Costs for the first quarter of the year (April 1, 1992 to June 30, 1992) were estimated based on Schedule A on April 1, 1992, and costs for the final three quarters (July 1, 1992 to March 31, 1993) were estimated based on Schedule A on July 1, 1992. Unit costs during the final three quarters of the year were increased to reflect salary increases that would occur during that period. A fee of $44 000 was added to the provinces total share to cover the cost of finalizing first quarter computations for the Provincial stations transferred to the Saskatchewan Water Corporation.

OPERATIONS

Hydrometric

April 1, 1992 to June 30, 1992

	No. of Stations	No. of Units	Unit Cost	Approx Total Cost	Provincial Share
Federal					
Normal Access	64	44.40	5 640	250 416	-
Remote Access	16	14.20	10 040	142 568	-
International	73	48.25	6 375	307 594	-
Sub Total	153	106.85		700 578	
Federal-Provincial					
Normal Access	115	87.25	5 640	492 090	246 045
Remote Access	18	16.20	10 040	162 648	81 324
Sub Total	133	103.45		654 738	327 369
Provincial					
Normal Access	36	24.20	5 640	136 488	136 488
Remote Access	4	3.40	10 040	34 136	34 136
Sub Total	40	27.60		170 624	170 624
Total	326	237.90		1 525 940	497 993

Estimated Provincial share of hydrometric costs
for the period April 1, 1992 to June 30, 1992: 497 933 X 0.25 = 124 498

July 1, 1992 to March 31, 1993

	No. of Stations	No. of Units	Unit Cost	Approx Total Cost	Provincial Share
Federal					
Normal Access	64	44.40	5 740	254 856	-
Remote Access	16	14.20	10 140	143 988	-
International	73	48.25	6 500	313 625	-
Sub Total	153	106.85		712 469	
Federal-Provincial					
Normal Access	115	87.25	5 740	500 815	250 408
Remote Access	18	16.20	10 140	164 268	82 134
Sub Total	133	103.45		665 083	332 542
Provincial					
Normal Access	0	0	5 740	0	0
Remote Access	4	3.40	10 140	34 476	34 476
Sub Total	4	3.40		34 476	34 476
Total	290	213.70		1 412 028	367 018

Estimated Provincial share of hydrometric costs for the period July 1, 1992 to March 31, 1993: 367 018 X 0.75 = 275 264

Computations

Finalizing first quarter record for normal access provincial stations. 44 000

Sediment

The 1992 sediment program consists of 1 seasonal, 7 miscellaneous and 25 special event stations. The provincial share of the program is for laboratory analysis only as the field costs are absorbed by the hydrometric program. 1 000

CONSTRUCTION

Streamflow and water level stations 5 000

TOTAL PROVINCIAL SHARE

Operations			
Hydrometric	$399 762		
Computations	$44 000		
Sediment	$1 000		
Total	$444 762	use	$445 000
Construction			$5 000
Grand Total			$450 000

APPENDIX E

NATIONAL GUIDELINES FOR DESIGNATION OF FEDERAL AND PROVINCIAL RESPONSIBILITY FOR WATER QUANTITY SURVEY STATIONS

NATIONAL GUIDELINES FOR DESIGNATING WATER QUANTITY SURVEY STATIONS

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

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

FEDERAL STATIONS

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

1. Federal Departmental Programs

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

2. Interprovincial Waters

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

3. International Waters

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

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

(b) Stations specifically stipulated under IJC orders, or required to support such orders; to provide for control of waters crossing or

forming part of the international boundary and for IJC related study, surveillance, flow regulation or apportionment purposes. Such stations may also be required for similar studies carried out under unilateral or bilateral mechanism and undertaken in anticipation of the need for formal orders.

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

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

4. National Water Quantity Inventory

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

FEDERAL-PROVINCIAL AND/OR FEDERAL-TERRITORIAL STATIONS

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

1. Federal-Provincial Agreements

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

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

2. River Basin Management

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

3. Regional Water Quantity Inventory

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

PROVINCIAL AND/OR TERRITORIAL STATIONS

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

1. Provincial Departmental Programs

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

2. Specific Purpose Monitoring Requirements

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