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**CANADA – NEWFOUNDLAND AND LABRADOR**

**MEMORANDUM OF AGREEMENT  
FOR  
WATER QUANTITY SURVEYS**

**REPORT FOR FISCAL YEAR  
2019-2020**

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## LETTER OF TRANSMITTAL

TO: Jean-François Cantin  
Administrator for Canada

Haseen Khan  
Administrator for the Department of Environment, Climate Change and  
Municipalities, Newfoundland and Labrador

We hereby submit an annual report for the fiscal year 2019-2020 covering activities under the Memorandum of Agreement for Water Quantity Surveys for Newfoundland and Labrador.

### Members Coordinating Committee


Government of Canada



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René Savoie  
Environment Canada and Climate Change

Government of Newfoundland and  
Labrador



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Paula V Dawe  
Dept. of Environment, Climate  
and Municipalities, Newfoundland  
and Labrador

## EXECUTIVE SUMMARY

In 1975, Canada and its provincial partners signed Memoranda of Agreement for Water Quantity Surveys. The purpose of the Agreement is to provide a mechanism to harmonize the hydrometric data collection, processing and distribution, as well as a procedure to cost-share the activities of the program. The evolution of the program has generated the need to renew the Agreement. There is a draft of a new bilateral agreement that has been developed, but no discussions regarding its implementation have taken place in 2019-2020. The new Agreement will ensure the delivery of an efficient and effective hydrometric monitoring service.

*During this reporting period, the number of stations was unchanged. One contributed site operated by the province was added. More details on these stations are given in section 3 of this report.*

In addition to the regular hydrometric activities, a survey of site conditions was done during fiscal year 2019-2020.

Currently 113 stations, over 99% of the network, are equipped with satellite telemetry and 1 station has modem telemetry using standard phone lines which means that 98% of the network is reporting in real-time. Only 1 station has no telemetry.

The actual share of the province (\$1000.7K) was 0.25 % higher than the original estimate plus the provincial contribution in equipment (\$998.2K). Financial details are given in section 5 of this report.

## 1. INTRODUCTION

This report covers the activities under the Canada/Newfoundland and Labrador Memorandum of Agreement for Water Quantity Surveys for the fiscal year 2019-2020.

The operation of an integrated network of hydrometric stations in Newfoundland and Labrador is cost-shared between Water Survey Division, Meteorological Service of Canada, Environment Canada (DOE), and Newfoundland and Labrador, Department of Environment, Climate Change and Municipalities under a Memorandum of Agreement (MOA).

The core of this report has been divided in 5 main sections:

The *Hydrologic Conditions* section provides a brief description of the hydrologic conditions that were encountered during 2019-2020.

The *Coordinators Meeting* section highlights the discussions undertaken during the year.

The *Network Characteristics* section includes a brief summary of the changes from the previous year. Also available is a breakdown of the responsibility classification for each category as well as a description of the other operational activities such as sediment, real-time, etc.

The *Operations* section includes a brief description of the operational activities for the year. This section lists the details of partner shares and invoices issued, as agreed to in Schedule D Estimates (Appendix B).

The report also includes a section on *Construction and Projects* which contains a brief description of the special projects.

In addition, the following Appendices have been included:

- Appendix A SCHEDULE C STATION LISTING 2019-2020
- Appendix B SIGNED SCHEDULE D 2019-2020
- Appendix C Summary of Cumulative Annual Costs 1975-76 to 2019-20

## 2.0 HYDROLOGIC CONDITIONS

### Streamflow and Water Level Conditions

Below are flow tables based on Apr-Dec 2019 approved data and Jan-Mar 2020 preliminary data for five major rivers in Newfoundland and Labrador. Historical Extremes updated to 2019 data. The final information can be found online for all monitored sites in Newfoundland and Labrador at: [www.wateroffice.ec.gc.ca](http://www.wateroffice.ec.gc.ca)

#### Rocky River 02ZK001 (Eastern NL) (Drainage Area 301 KM2)

Year 2019/2020	MEAN FLOW (M/3S)	FOR THE MONTH		HISTORICAL EXTREMES **			
		MAXIMUM (DAY)	MINIMUM (DAY)	MONTHLY		DAILY	
				MAXIMUM (YEAR)	MINIMUM (YEAR)	MAXIMUM (YEAR)	MINIMUM (YEAR)
<b>April</b>	12.1	43.2	3.32	35.8	7.89	133	1.8
<b>2019</b>		(26)	(13)	(1964)	(1979)	(2004)	(1959)
<b>May</b>	5.26	9.19	3	25.7	3.51	91.6	1.5
<b>2019</b>	D	(19)	(31)	(1985)	(1962)	(1985)	(1962)
<b>June</b>	7.3	23.9	2.63	18.5	2.04	87.1	0.65
<b>2019</b>		(7)	(2)	(1990)	(1957)	(1988)	(1951)
<b>July</b>	9.28	25.8	3.75	13.8	0.81	93.9	0.42
<b>2019</b>		(16)	(13)	(1981)	(1949)	(1988)	(1949)
<b>August</b>	3.32	11.5	1.65	30.6	0.548	199	0.2
<b>2019</b>		(10)	(22)	(1970)	(1949)	(2007)	(1950)
<b>September</b>	10.8	44.3	2.51	19.6	0.628	216	0.24
<b>2019</b>		(26)	(3)	(2004)	(1961)	(2004)	(1961)
<b>October</b>	7.81	32.9	3.05	27.2	3.68	124	0.69
<b>2019</b>	D	(18)	(12)	(1970)	(1949)	(1953)	(1961)
<b>November</b>	12.3	38.3	3.08	25.8	3.95	125	1.9
<b>2019</b>		(30)	(1)	(1956)	(1948)	(1956)	(1948)
<b>December</b>	19.1	58.5	3.8	31.1	7.53	174	2.6
<b>2019</b>	E	(16)	(31)	(1953)	(1986)	(1953)	(1961)
<b>January</b>	4.8	10.7	2.8	28.7	4.77	146	1.8
<b>2020</b>	D	(13)	(31)	(1952)	(1988)	(1951)	(2010)
<b>February</b>	21.7	40.7	5.4	36.9	2.26	294	1.2
<b>2020</b>	E	(4)	(1)	(1962)	(1975)	(1962)	(1961)
<b>March</b>	19.1	41.6	7.83	39.8	3.2	200	0.93
<b>2020</b>		(28)	(12)	(1994)	(1963)	(1994)	(1963)

**D**eficiency for the period or daily number. 25% are less than the lower quartile (below normal)

**E**xcessive for the period or daily number. 25% are greater than the upper quartile (above normal)

**R**ecord for the period or daily number (Preliminary)

**Gander River 02YQ001 (Central NL)**  
**(Drainage Area 4400 KM2)**

Year 2019/2020	MEAN FLOW (M/3S)	FOR THE		HISTORICAL EXTREMES **			
		MONTH		MONTHLY		DAILY	
		MAXIMUM (DAY)	MINIMUM (DAY)	MAXIMUM (YEAR)	MINIMUM (YEAR)	MAXIMUM (YEAR)	MINIMUM (YEAR)
April 2019	254	331 (30)	131 (1)	513 (1987)	44.4 (1967)	925 (1993)	22.8 (1950)
May 2019	177	329 (1)	103 (31)	451 (1967)	90.3 (1958)	761 (2001)	50.4 (2006)
June 2019	121 E	146 (25)	90 (3)	198 (2009)	37.7 (1979)	336 (2010)	18.1 (1979)
July 2019	73 E	106 (1)	39.1 (31)	148 (2010)	13.9 (1975)	206 (2006)	9 (1975)
August 2019	24.1 D	38.2 (1)	14.6 (31)	179 (1980)	6.92 (1987)	378 (1980)	4.8 (1987)
September 2019	17.1 D	43.1 (30)	12.6 (10)	196 (1984)	4.16 (1961)	527 (2004)	2.8 (1961)
October 2019	54.5 D	71.2 (24)	43.1 (14)	269 (1981)	9.88 (1950)	597 (2003)	3.3 (1961)
November 2019	131	193 (30)	53.7 (3)	242 (1962)	37.2 (1961)	398 (2003)	14.8 (1961)
December 2019	233 E	321 (13)	96.6 (31)	272 (2004)	36.9 (1985)	549 (1977)	28.4 (1985)
January 2020	51.6 D	91.5 (1)	35.2 (31)	352 (1983)	36.3 (1985)	1170 (1983)	25.3 (1985)
February 2020	31.2 D	34.7 (1)	26.8 (29)	288 (1969)	18.6 (1961)	688 (1984)	14.8 (1961)
March 2020	49.7 D	112 (31)	26.2 (2)	275 (1988)	17.2 (1950)	560 (1992)	9.8 (1961)

**D**eficiency for the period or daily number. 25% are less than the lower quartile (below normal)

**E**xcessive for the period or daily number. 25% are greater than the upper quartile (above normal)

**R**ecord for the period or daily number (Preliminary)

**Upper Humber River 02YL001 (Western NL)**  
**(Drainage Area 2110 KM2)**

Year 2019/2020	MEAN FLOW (M/3S)	FOR THE		HISTORICAL EXTREMES **			
		MONTH		MONTHLY		DAILY	
		MAXIMUM (DAY)	MINIMUM (DAY)	MAXIMUM (YEAR)	MINIMUM (YEAR)	MAXIMUM (YEAR)	MINIMUM (YEAR)
<b>April</b>	119	274	50.9	288	19.2	749	9.2
<b>2019</b>		(26)	(13)	(1934)	(1967)	(1987)	(1955)
<b>May</b>	204	306	121	383	127	879	35.8
<b>2019</b>	D	(28)	(3)	(1993)	(1983)	(1993)	(1983)
<b>June</b>	233	455	95	354	25.8	1010	8.5
<b>2019</b>	E	(5)	(30)	(1933)	(1979)	(1984)	(1951)
<b>July</b>	62	165	16.8	140	9.3	555	3.9
<b>2019</b>	E	(4)	(31)	(1939)	(1987)	(1933)	(1986)
<b>August</b>	19.1	35.8	11.4	103	3.91	447	1.6
<b>2019</b>	D	(17)	(10)	(1973)	(1940)	(1973)	(1940)
<b>September</b>	53.9	134	12.9	162	15.2	504	1.6
<b>2019</b>		(28)	(3)	(1944)	(1946)	(1955)	(1940)
<b>October</b>	40.6	94.5	22.9	167	24.7	530	8
<b>2019</b>	D	(1)	(31)	(1977)	(1948)	(1957)	(1954)
<b>November</b>	163	606	55.5	177	42.6	813	8.8
<b>2019</b>	E	(3)	(25)	(1962)	(1986)	(1935)	(1948)
<b>December</b>	94.4	421	34.2	156	11.4	736	6.8
<b>2019</b>	E	(12)	(31)	(1954)	(1986)	(1935)	(1986)
<b>January</b>	23.5	33.1	18.6	129	10.2	663	4
<b>2020</b>		(1)	(31)	(1950)	(1971)	(1983)	(1990)
<b>February</b>	18	18.6	17.7	106	5.91	348	3.7
<b>2020</b>		(1)	(29)	(1969)	(1975)	(1969)	(1993)
<b>March</b>	20.9	35.9	16.7	141	7.8	530	4
<b>2020</b>		(30)	(19)	(1979)	(1959)	(1936)	(1992)

**D**eficiency for the period or daily number. 25% are less than the lower quartile (below normal)

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**R**ecord for the period or daily number (Preliminary)



**02ZB001 Isle Aux Morts River (South Western NL)**  
**(Drainage Area 205 KM2)**

Year 2019/2020	MEAN FLOW (M/3S)	FOR THE		HISTORICAL EXTREMES **			
		MONTH		MONTHLY		DAILY	
		MAXIMUM (DAY)	MINIMUM (DAY)	MAXIMUM (YEAR)	MINIMUM (YEAR)	MAXIMUM (YEAR)	MINIMUM (YEAR)
April	25.5	90.8 ↓ (24)	2.56 ↓ (11)	46.3 ↓ (1994)	3.62 ↓ (1967)	325 ↓ (2003)	0.696 ↓ (2004)
2019							
May	29.1	60 ↓ (22)	9.14 ↓ (2)	51.1 ↓ (1994)	6.16 ↓ (1986)	226 ↓ (1972)	2.18 ↓ (2010)
2019							
June	18.8	55.1 ↓ (3)	2.27 ↓ (30)	34.7 ↓ (1972)	2.58 ↓ (1976)	259 ↓ (1985)	0.79 ↓ (1976)
2019	E						
July	3.78	21.6 ↓ (2)	0.701 ↓ (31)	22.7 ↓ (1981)	1.17 ↓ (1989)	102 ↓ (1993)	0.35 ↓ (1989)
2019							
August	1.45	10 ↓ (30)	0.421 ↓ (18)	17.9 ↓ (2007)	1.39 ↓ (1978)	124 ↓ (1990)	0.34 ↓ (1978)
2019	D						
September	6.84	19.6 ↓ (8)	1.48 ↓ (23)	23.7 ↓ (1998)	3.53 ↓ (1973)	176 ↓ (2005)	0.71 ↓ (1969)
2019	D						
October	9.71	39.1 ↓ (24)	2.86 ↓ (6)	31 ↓ (1972)	5.65 ↓ (1963)	178 ↓ (1977)	1.13 ↓ (2001)
2019	D						
November	33.2	118 ↓ (13)	8.41 ↓ (22)	38.3 ↓ (1967)	7.7 ↓ (2000)	348 ↓ (2006)	1.6 ↓ (1970)
2019	E						
December	20.5	112 ↓ (15)	2.65 ↓ (31)	43 ↓ (1990)	3.13 ↓ (1994)	434 ↓ (1990)	0.83 ↓ (2007)
2019	E						
January	5.41	18.3 ↓ (28)	1.83 ↓ (26)	24 ↓ (1986)	1.22 ↓ (1991)	219 ↓ (1986)	0.57 ↓ (1991)
2020							
February	2.41	6 ↓ (1)	0.726 ↓ (29)	31.1 ↓ (1996)	0.923 ↓ (1975)	243 ↓ (1996)	0.41 ↓ (1991)
2020							
March	9.49	37.1 ↓ (21)	0.665 ↓ (2)	38.9 ↓ (1979)	0.737 ↓ (2004)	410 ↓ (1996)	0.34 ↓ (1987)
2020							

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**R**ecord for the period or daily number (Preliminary)

**03QC001 Eagle River (Labrador)**  
**(Drainage Area 10900 KM2)**

Year 2019/2020	MEAN FLOW (M/3S)	FOR THE		HISTORICAL EXTREMES **			
		MONTH		MONTHLY		DAILY	
		MAXIMUM (DAY)	MINIMUM (DAY)	MAXIMUM (YEAR)	MINIMUM (YEAR)	MAXIMUM (YEAR)	MINIMUM (YEAR)
April	18.6	21	16.3	311	8.33	2460	7.2
2019	D	(1)	(30)	(2010)	(1993)	(1983)	(1993)
May	655	1500	16	1400	106	2690	11.8
2019		(31)	(2)	(1971)	(1967)	(1971)	(1975)
June	1400	1630	997	1810	265	2990	127
2019	E	(8)	(30)	(1985)	(2005)	(1985)	(2005)
July	447	887	261	638	119	1330	71.4
2019	E	(1)	(31)	(1985)	(1976)	(1980)	(1976)
August	351	452	251	495	102	1320	64
2019	E	(14)	(1)	(1989)	(1988)	(1967)	(2008)
September	315	448	188	521	84.1	827	59
2019	E	(12)	(28)	(1976)	(1984)	(1976)	(1984)
October	134	191	103	515	100	705	78.4
2019	D	(1)	(31)	(1978)	(1973)	(1966)	(1973)
November	93.6	103	85.7	488	65.3	695	51
2019	D	(1)	(30)	(1995)	(2002)	(1980)	(1974)
December	77.7	85.1	70.6	218	36.3	410	27.5
2019		(1)	(31)	(1995)	(1974)	(2005)	(1974)
January	65.9	70.2	62.9	98.9	22.4	108	19
2020		(1)	(31)	(1969)	(1975)	(1969)	(1993)
February	62	62.8	61.4	86.2	14.9	90.6	11.8
2020	E	(1)	(29)	(1969)	(1993)	(1969)	(1993)
March	60.8	61.4	60.1	78.7	9.64	119	8.2
2020	E	(1)	(31)	(1969)	(1993)	(1979)	(1993)

**D**eficiency for the period or daily number. 25% are less than the lower quartile (below normal)

**E**xcessive for the period or daily number. 25% are greater than the upper quartile (above normal)

**R**ecord for the period or daily number (Preliminary)

### 3.0 COORDINATORS MEETINGS

The coordinators met in person once and frequent e-mail correspondence and conference calls took place in 2019-2020. Discussions range from operating cost, capital plan, and bilateral agreement.

### 4.0 NETWORK CHARACTERISTICS

Water Survey of Canada operates 113 hydrometric stations in Newfoundland and Labrador. The station classifications are listed in the next Table.

The province currently operates 2 Provincial-Contributed stations, which are listed in Appendix A.

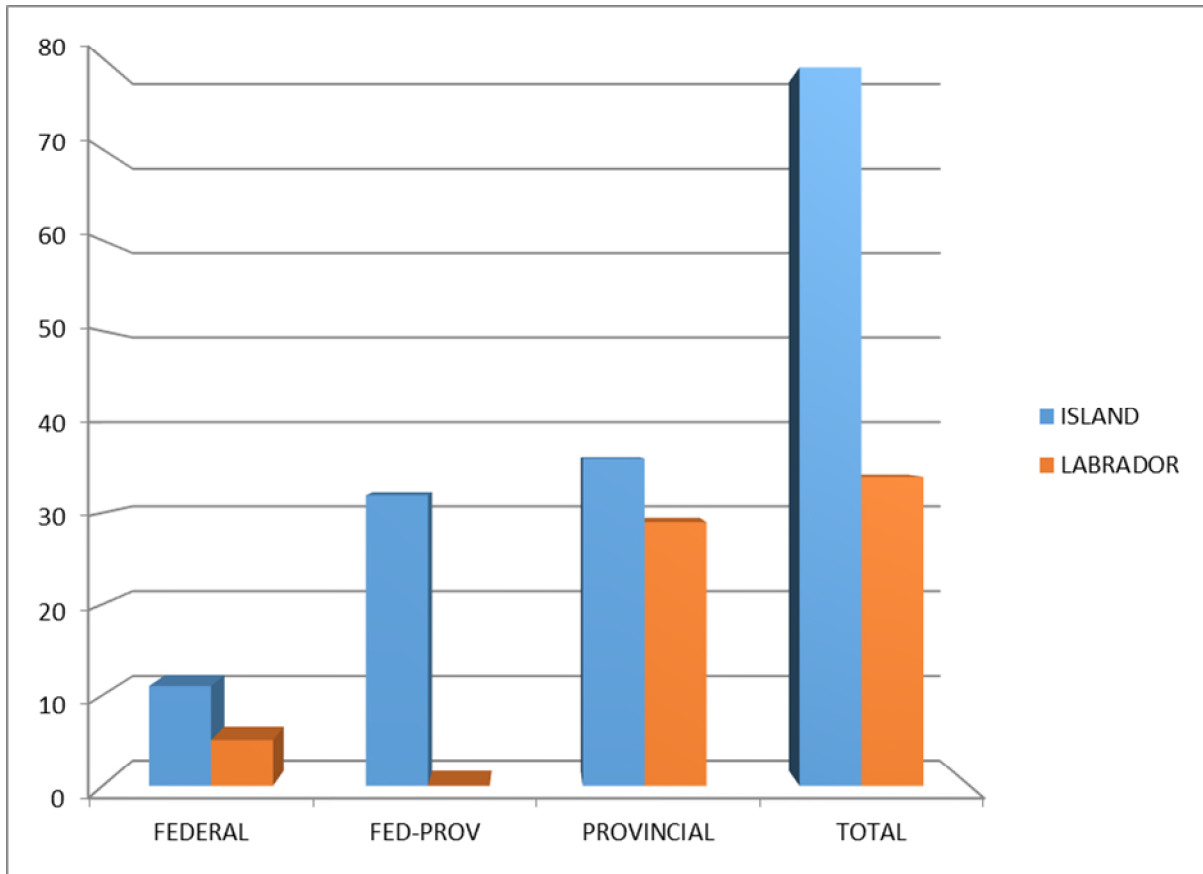
Water Survey of Canada also takes water samples at 5 different sites for water quality purpose on behalf of the Newfoundland and Labrador Department of Environment, Climate Change and Municipalities. These sites are converted in station units in order to have their cost calculated under this agreement.

Under the Canada–Newfoundland and Labrador Memorandum of Agreement, 113 stations were operated in 2019-2020. The complete station list is available in Appendix A. The stations classifications are as follow:

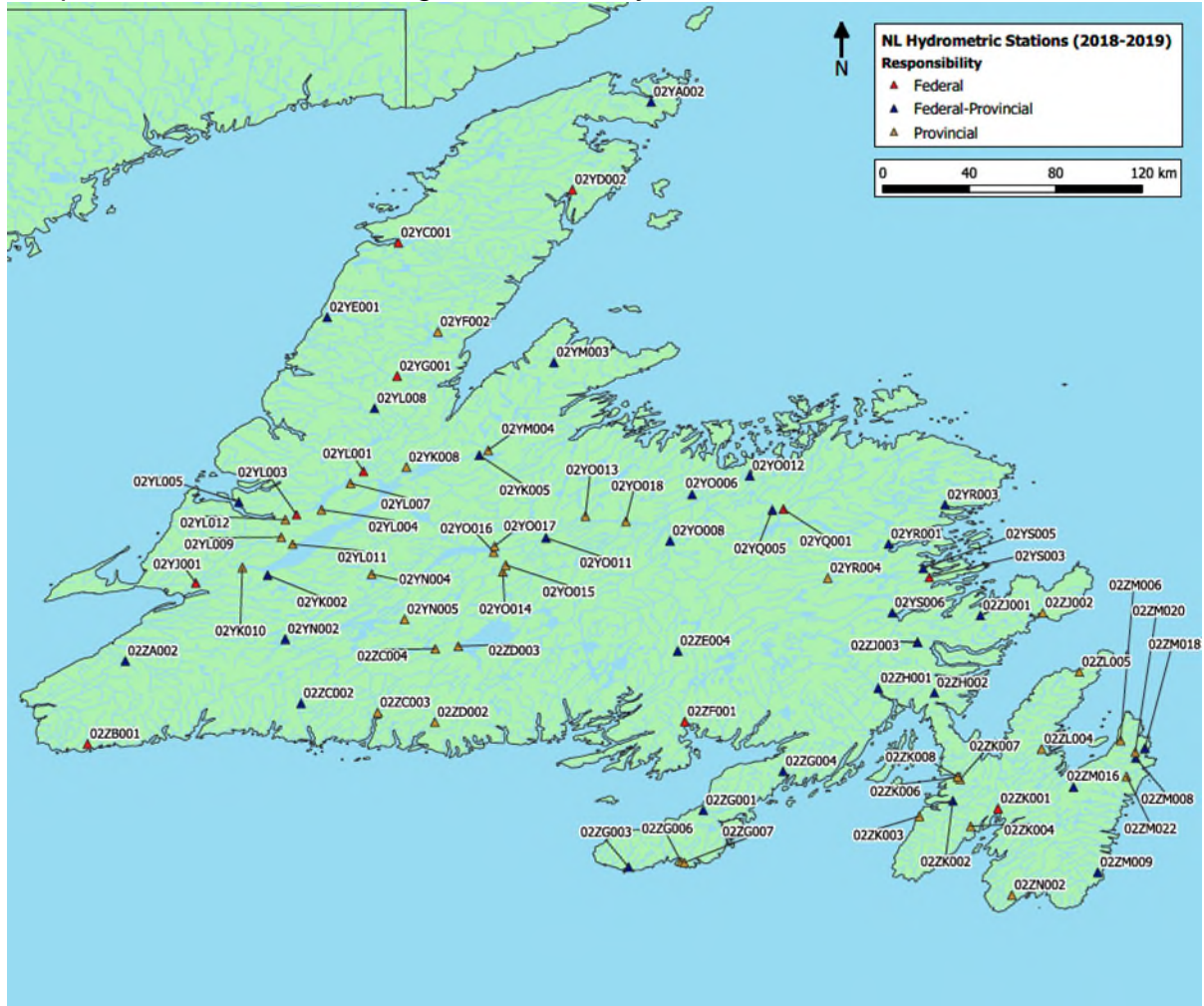
Table 3.1: *Station classification based on Newfoundland and Labrador*

NEWFOUNDLAND AND LABRADOR			
CLASSIFICATION	ISLAND	LABRADOR	TOTAL
FEDERAL	11	5	16
FED-PROV	32	0	32
PROVINCIAL	36	29	65
TOTAL	79	34	113

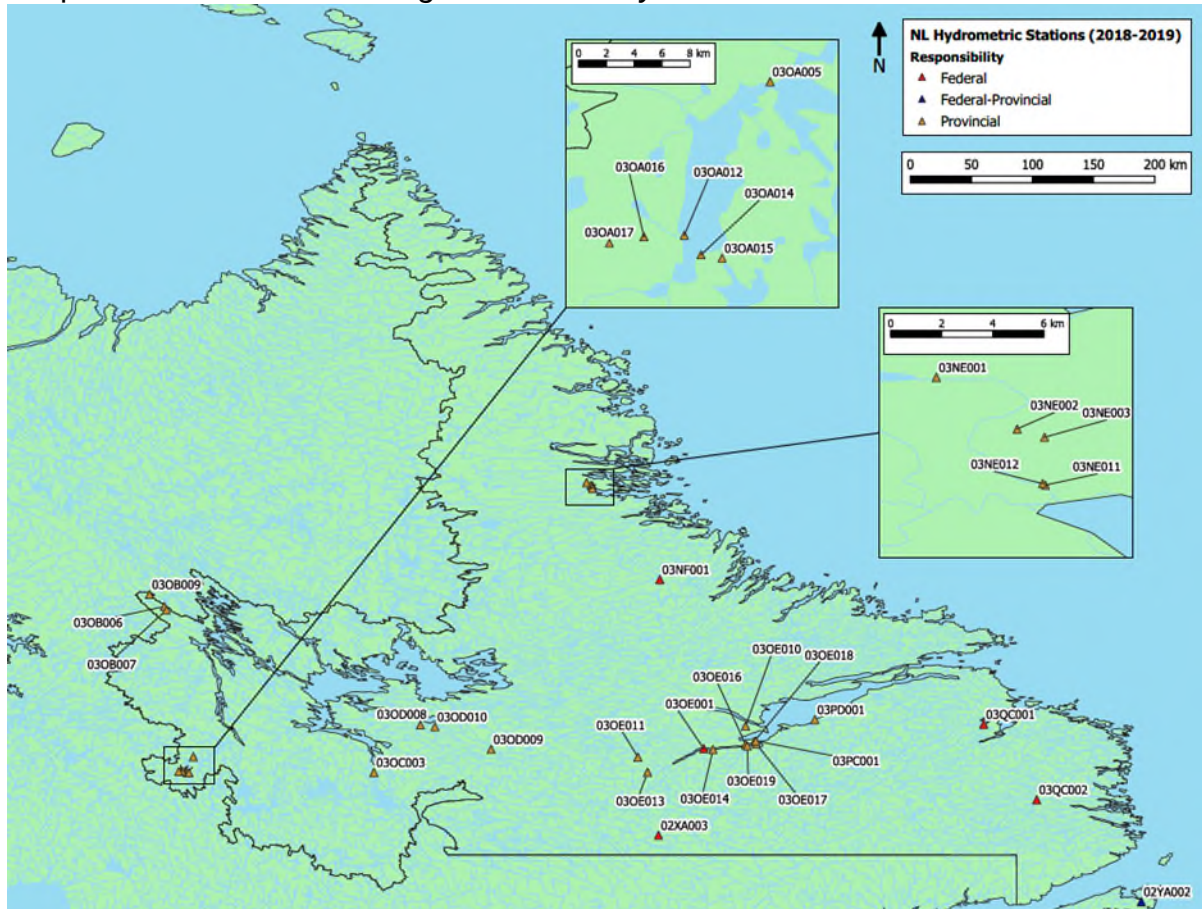
Graph 3.1: *Distribution of station classification for Newfoundland and Labrador*



Graph 3.2: Location and designation of the hydrometric network in Newfoundland



Graph 3.3: Location and designation of the hydrometric network in Labrador



## 5.0 OPERATIONS

A true costing approach has been utilized to derive the station costs for this fiscal year in accordance with the agreement. The costs were apportioned based on the station classification and then totaled to determine each parties share. Employee benefit costs on salary and data management costs have been included and attributed to all parties as agreed on by the National Administrator’s meeting in Quebec City, October 1999.

The Newfoundland and Labrador Department of Environment, Climate Change and Municipalities was credited with the total amount of \$29,958 for the contribution to the Partnership. The details of those contributions are listed in the next table.

The following table summarizes the estimated and the actual costs to operate the provincial share of the stream gauging network in Newfoundland and Labrador for 2019-2020.

### STREAMFLOW AND WATER LEVEL COSTS FOR NEWFOUNDLAND AND LABRADOR

	2019/20	2019/20
OPERATIONAL	Planned	Actuals
Salaries (Including benefits 20%)	\$ 562,562	\$ 590,400
Hydrometric Operations O&M	\$ 376,350	\$351,347
Capital	\$68,814	\$89,974
Real Property Credit	-\$9,600	-\$9,600
Real Time Web Cam	-\$7,350	-\$7,350
Weather Station	-\$4,305	-\$4,305
Special Project (user survey)	\$-8,703	\$-8,703
Equipment purchased by the province *	\$20,437	
<b>TOTALS</b>	<b>\$998,205</b>	<b>\$1,001,763</b>

\* The equipment purchased by the province was not part of the signed schedule D but it accounted as a provincial contribution to the program.

### SUMMARY OF TOTAL EXPENDITURES 2019-2020

CATEGORY	FEDERAL	NEWFOUNDLAND AND LABRADOR	TOTAL
Hydrometric operations (O&M)	\$146,624	\$351,347	\$497,971
Capital (Hydroacoustic Equipment)	\$18,025	\$41,427	\$59,452
Capital (Vehicles)	0	\$48,547	\$48,547
Salaries + 20%	\$263,419	\$ 590,400	\$853,819
<b>TOTAL</b>	<b>\$428,068</b>	<b>\$1,031,721</b>	<b>\$1,459,789</b>

The signed version of the Schedule D can be found in the Appendix B

### **O&M Expenditures Details**

<b>ITEM</b>	<b>Actual Expenditures (Fiscal Year 19/20)</b>
022 - TELECOMMUNICATION SERVICES	\$ 5,337
025 - TRAVEL-PUBLIC SERVANTS	\$ 49,615
082 - SPECIAL FEES AND SERVICES	\$ 136
040 - BUSINESS SERVICES	\$ 1,756
117 - MISCELLANEOUS GOODS AND PRODUCTS	\$ 8,607
021 - POSTAGE, FREIGHT, EXPRESS, AND CARTAGE	\$ 4,610
044 - TRAINING AND EDUCATIONAL SERVICES	\$ 10,915
026 - TRAVEL-NON-PUBLIC SERVANTS	\$ 382
325 - MISCELLANEOUS EXPENDITURES	\$ 102
122 - ACQUISITION OF INFORMATICS EQUIPMENT AND PARTS	\$ 1,122
043 - SCIENTIFIC AND RESEARCH SERVICES	\$ 9,745
123 - ACQUISITION OF OFFICE EQUIPMENT INCLUDING PARTS	\$ 327
053 - RENTAL OF MACHINERY, OTHER EQUIPMENT	\$ 319
065 - REPAIR OF MACHINERY AND EQUIPMENT	\$ 18,078
112 - MINERAL PRODUCTS	\$ 25,131
070 - UTILITY SERVICES	\$ 1,303
056 - RENTAL OF AIRCRAFT AND SHIPS	\$ 162,137
046 - PROTECTION SERVICES	\$ 1,260
115 - PERSONAL GOODS	\$ 9,214
124 - ACQUISITION OF EQUIPMENT INCLUDING PARTS	\$ 29,425
126 - ACQUISITION OF OTHER VEHICLES AND PARTS	\$ 10,030
121 - ACQUISITION OF MACHINERY AND MACHINERY PARTS	\$ 507
116 - METALS AND METAL PRODUCTS	\$ 1,208
125 - ACQUISITION OF AIRCRAFT AND SHIPS, INCLUDING PARTS	\$ 80
<b>TOTAL</b>	<b>\$ 351,347</b>



## 6.0 CONSTRUCTION & SPECIAL PROJECTS

All construction projects and hydrometric station equipment purchases (data loggers, transducers, GOES transmitter upgrades) for life cycle management (LCM) are authorized in advance by the Newfoundland and Labrador Department of Environment, Climate Change and Municipalities on a case by case basis. Annual maintenance was conducted to ensure minimal data loss and maintain data quality.

During the summer of 2019, field visits were conducted at 12 hydrometric stations with a variety of issues. Staff assessed the conditions of the hydrometric equipment shelters, the stilling wells, cableways and environmental contamination aspects. The stations assessed were as follows:

- 02YL008 – Upper Humber River above Black Brook
- 02YL001 – Upper Humber River near Reidville
- 02ZK001 – Rocky River near Colinet
- 02YO011 – Exploits River below Noel Pauls Brook
- 02YC001 – Torrent River at Bristol's Pool
- 02YQ005 – Salmon River near Glenwood
- 02YS005 – Terra Nova River at Glovertown
- 02YO005 – Exploits River below Stony Brook
- 02YM004 – Indian Brook Diversion above Birchy Lake
- 02YR001 – Middle Brook near Gambo
- 02YK005 – Sheffield Brook near Trans Canada Highway
- 02YL005 – Rattler Brook near McIvers

The main cost for this project was staff travel. This project was funded through the Treasury Board operation and maintenance fund.

The province undertook GNSS surveys for CVGD2013 datum conversion at the following sites in 2019-20:

02YL007	DEER LAKE NEAR GENERATING STATION
02ZM006	NORTHEAST POND RIVER AT NORTHEAST POND
02ZM009	SEAL COVE BROOK NEAR CAPPAHAYDEN

## Appendix A

### SCHEDULE C 2019-2020 – STATION LIST

#### FEDERAL

02ZF001	BAY DU NORD RIVER AT BIG FALLS
02YQ001	GANDER RIVER AT BIG CHUTE
02YJ001	HARRYS RIVER BELOW HIGHWAY BRIDGE
02YL003	HUMBER RIVER AT HUMBER VILLAGE BRIDGE
02ZB001	ISLE AUX MORTS RIVER BELOW HIGHWAY BRIDGE
02YG001	MAIN RIVER AT PARADISE POOL
02YD002	NORTHEAST BROOK NEAR RODDICKTON
02ZK001	ROCKY RIVER NEAR COLINET
02YS003	SOUTHWEST BROOK AT TERRA NOVA NATIONAL PARK
02YL001	UPPER HUMBER RIVER NEAR REIDVILLE
02YC001	TORRENT RIVER AT BRISTOL'S POOL
03QC002	ALEXIS RIVER NEAR PORT HOPE SIMPSON
03OE001	CHURCHILL RIVER ABOVE UPPER MUSKRAT FALLS
03QC001	EAGLE RIVER ABOVE FALLS
02XA003	LITTLE MECATINA RIVER ABOVE LAC FOURMONT
03NF001	UGJOKTOK RIVER BELOW HARP LAKE

#### FEDERAL - PROVINCIAL

02YA002	BARTLETTS RIVER NEAR ST. ANTHONY
02ZH002	COME-BY-CHANCE RIVER NEAR GOOBIES
02ZE004	CONNE RIVER AT OUTLET OF CONNE POND
02YO011	EXPLOITS RIVER BELOW NOEL PAULS BROOK
02ZG001	GARNISH RIVER NEAR GARNISH
02ZC002	GRANDY BROOK BELOW TOP POND BROOK
02YO008	GREAT RATTILING BROOK ABOVE TOTE RIVER CONFLUENCE
02YE001	GREAVETT BROOK ABOVE PORTLAND CREEK POND
02ZA002	HIGHLANDS RIVER AT TRANS CANADA HIGHWAY
02YR003	INDIAN BAY BROOK NEAR NORTHEAST ARM
02YK002	LEWASSECHJEECH BROOK AT LITTLE GRAND LAKE
02YN002	LLOYDS RIVER BELOW KING GEORGE IV LAKE
02YR001	MIDDLE BROOK NEAR GAMBO
02ZK002	NORTHEAST RIVER NEAR PLACENTIA
02YO006	PETERS RIVER NEAR BOTWOOD
02ZH001	PIPERS HOLE RIVER AT MOTHERS BROOK
02ZG004	RATTLE BROOK NEAR BOAT HARBOUR
02YL005	RATTLER BROOK NEAR MCIVERS
02YQ005	SALMON RIVER NEAR GLENWOOD

02ZG003	SALMONIER RIVER NEAR LAMALINE
02ZM009	SEAL COVE BROOK NEAR CAPPAHAYDEN
02YK005	SHEFFIELD BROOK NEAR TRANS CANADA HIGHWAY
02ZJ003	SHOAL HARBOUR RIVER NEAR CLARENVILLE
02ZM016	SOUTH RIVER NEAR HOLYWOOD
02ZJ001	SOUTHERN BAY RIVER NEAR SOUTHERN BAY
02YO012	SOUTHWEST BROOK AT LEWISPORTE
02YM003	SOUTH WEST BROOK NEAR BAIE VERTE
02YS005	TERRA NOVA RIVER AT GLOVERTOWN
02YL008	UPPER HUMBER RIVER ABOVE BLACK BROOK
02ZM018	VIRGINIA RIVER AT PLEASANTVILLE
02YS006	NORTHWEST RIVER AT TERRA NOVA NATIONAL PARK
02ZM008	WATERFORD RIVER AT KILBRIDE

**PROVINCIAL**

02ZL005	BIG BROOK AT LEAD COVE
02YK008	BOOT BROOK AT TRANS-CANADA HIGHWAY
02YL009	CORNER BROOK LAKE AT LAKE OUTLET
02YL007	DEER LAKE NEAR GENERATING STATION
02YO015	EAST POND BROOK BELOW EAST POND
02YO014	TRIBUTARY TO GILL'S POND BROOK
02YK010	GRAND LAKE EAST OF GRAND LAKE BROOK
02YO013	EXPLOITS RIVER AT BADGER
02YO016	EXPLOITS RIVER NEAR MILLERTOWN
02YO018	EXPLOITS RIVER at Charlie Edwards Point
02YO017	Red Indian Lake at Indian Point
02ZC004	GRANITE LAKE AT EAST END
02ZD002	GREY RIVER NEAR GREY RIVER
02YM004	INDIAN BROOK DIVERSION ABOVE BIRCHY LAKE
02ZM020	LEARYS BROOK AT PRINCE PHILIP DRIVE
02ZK003	LITTLE BARACHOIS RIVER NEAR PLACENTIA
02ZK004	LITTLE SALMONIER RIVER NEAR NORTH HARBOUR
02ZK007	RATTLING BROOK BIG POND
02ZK006	RATTLING BROOK BELOW BRIDGE
02ZK008	Rattling Brook below Plant Discharge
02ZM006	NORTHEAST POND RIVER AT NORTHEAST POND
02ZM022	RAYMOND BROOK AT OUTLET OF BAY BULLS BIG POND
02ZJ002	SALMON COVE RIVER NEAR CHAMPNEYS
02ZL004	SHEARSTOWN BROOK AT SHEARSTOWN
02YL004	SOUTH BROOK AT PASADENA
02YL012	Steady Book above Confluence of Humber river

02ZN002	ST. SHOTTS RIVER NEAR TREPASSEY
02YN004	STAR BROOK ABOVE STAR LAKE
02YR004	TRITON BROOK ABOVE GAMBO POND
02YN005	VICTORIA LAKE AT NORTHEAST CONTROL STRUCTURE
02ZD003	R.R. POND NEAR GRANITE LAKE
02YF002	CAT ARM RESERVOIR NEAR SPILLWAY
02ZC003	WHITE BEAR RIVER ABOVE BIG INDIAN BROOK
02ZG006	OUTFLOW OF GREBES NEST POND
02YO019	Badger Brook Below Foot Bridge
02ZG007	OUTFLOW OF UNNAMED POND SOUTH OF LONG POND
03OC003	ATIKONAK RIVER ABOVE PANCHIA LAKE
03NE003	CAMP POND AT SOUTHWEST END
03NE002	CAMP POND BROOK BELOW CAMP POND
03OA012	Luce Brook below Tinto Pond
03OA014	Wabush Lake at Dolomite Rd
03OA005	Wabush Lake at Lake Outlet
03OE011	PINUS RIVER
03NE011	REID BROOK Below Tributary
03NE001	REID BROOK AT OUTLET OF REID POND
03NE012	TRIBUTARY to Reid Brook
03OE013	CHURCHILL RIVER ABOVE GRIZZLE RAPIDS
03OE014	CHURCHILL RIVER 6.15KMS BELOW MUSKRAT FALLS
03PD001	Lake Melville East of Little River
03PC001	Churchill River at English Point
03OB006	Goodream Creek 2KM Northwest of Timmins 6
03OB007	Eloss Creek below Pinette Lake Inflow
03OA015	Flora Creek below Trans Labrador Highway
03OE015	Churchill River at Mid Pool
03OB009	Joan Brook below outlet of Joan Lake
03OA016	Dumbell stream above Dumbell Lake
03OD008	Churchill River Above Churchill Falls Tailrace
03OD009	Churchill River below Metchin River
03OD010	Churchill River Below Churchill Falls Tailrace
03OE017	Mud Lake at outlet tributary at Mud Lake
03OA017	Pumphouse Stream above Drum Lake
03OE019	Churchill River Below Outlet of Traverspine River
03OE018	Churchill River at End of Mud Lake Road
03PD002	Churchill River Outlet at Rabbit Island
03OE016	Churchill River at Happy Valley

**PROVINCIAL-CONTRIBUTED**

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NLENHM0001	GOOSE RIVER AT BRIDGE
NLENHM0002	RAMBLER OUTFLOW OF THE STEADY

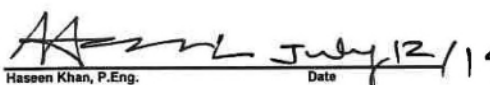
**Appendix B       SIGNED SCHEDULE D 2019-2020**

NEWFOUNDLAND AND LABRADOR 2019-2020  
SCHEDULE D


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

ANNUAL PAYMENT FOR 2019-2020 TO BE PAID TO THE RECEIVER  
GENERAL FOR CANADA BY THE PROVINCE OF NEWFOUNDLAND AND LABRADOR

NEWFOUNDLAND and LABRADOR SHARE	O&M	Salary	Capital	Total
a) Streamflow and Water Level Installations - Island	\$100,580	\$345,309	\$44,616	\$490,505
b) Streamflow and Water Level Installations - Labrador	\$275,770	\$217,253	\$24,198	\$517,221
c) Construction & Major Maintenance (LCM)	\$0	\$0	\$0	\$0
d) Station Decommissioning	\$0	\$0	\$0	\$0
e) Hydrometric Workstation	\$0	\$0	\$0	\$0
f) Real Property Credit for Federal stations on Provincial Crown Land	(\$9,600)	\$0	\$0	(\$9,600)
g) Real Time Webcam	(\$7,350)	\$0	\$0	(\$7,350)
h) Weather Stations	(\$4,305)	\$0	\$0	(\$4,305)
i) Basin Delineation & Information	\$0	\$0	\$0	\$0
j) Special Projects* (For FY 19/20 credit for users survey)	(\$1,966)	(\$6,737)	\$0	(\$8,703)
<b>TOTAL</b>	<b>\$353,129</b>	<b>\$555,826</b>	<b>\$68,814</b>	<b>\$977,768</b>



\_\_\_\_\_  
Haseen Khan, P.Eng.  
Director  
Water Resources Management Division  
Department of Environment and Climate Change  
Administrator for Province of Newfoundland and Labrador



\_\_\_\_\_  
Alain Pietroniro  
Executive Director  
National Hydrological Service  
Meteorological Service of Canada  
Environment and Climate Change Canada

**JUL 15 2019**

\* Special Projects that contribute to the ongoing integrity of the program will be credited upon agreement by both parties.

## Appendix C Summary of Cumulative Annual Costs 1975-76 to 2019-20

SUMMARY OF ACTUAL ANNUAL COSTS AND PAYMENTS									
1975-76 TO 2017 - 2018									
	SCHEDULE "D" PAYMENTS BY PROVINCE				ACTUAL PROVINCIAL SHARE				PROVINCIAL
									+CREDIT
YEAR	HYDROMET	SEDIMENT	CONSTR'N	TOTAL	HYDROMET	SEDIMENT	CONSTR'N	TOTAL	-DEBIT
1975-76	\$ 37,800	\$ -	\$ 3,600	\$ 41,400	\$ 36,238	\$ -	\$ 2,177	\$ 38,415	\$ 2,985
1976-77	\$ 32,340	\$ -	\$ 12,000	\$ 44,340	\$ 37,840	\$ -	\$ 1,573	\$ 39,413	\$ 4,927
1977-78	\$ 35,520	\$ -	\$ 24,480	\$ 60,000	\$ 38,700	\$ -	\$ 13,963	\$ 52,663	\$ 7,337
1978-79	\$ 56,775	\$ 1,400	\$ 11,825	\$ 70,000	\$ 51,371	\$ 679	\$ 26,000	\$ 78,050	-\$ 8,050
1979-80	\$ 68,338	\$ 933	\$ 25,729	\$ 95,000	\$ 62,256	\$ 896	\$ 22,476	\$ 85,628	\$ 9,372
1980-81	\$ 78,639	\$ 1,475	\$ 6,000	\$ 86,114	\$ 83,518	\$ 1,064	\$ 7,703	\$ 92,285	-\$ 6,171
1981-82	\$ 83,523	\$ 3,750	\$ 14,000	\$ 101,273	\$ 100,726	\$ 3,114	\$ 16,560	\$ 120,400	-\$ 19,127
1982-83	\$ 96,542	\$ 3,744	\$ 55,000	\$ 155,286	\$ 102,735	\$ 5,886	\$ 47,224	\$ 155,845	-\$ 559
1983-84	\$ 141,457	\$ 4,470	\$ 38,000	\$ 183,927	\$ 136,917	\$ 6,906	\$ 37,864	\$ 181,687	\$ 2,240
1984-85	\$ 168,244	\$ 7,350	\$ 52,000	\$ 227,594	\$ 168,247	\$ 5,295	\$ 48,662	\$ 222,204	\$ 5,390
1985-86	\$ 195,563	\$ 7,650	\$ 36,787	\$ 240,000	\$ 191,580	\$ 6,324	\$ 39,203	\$ 237,107	\$ 2,893
1986-87	\$ 211,706	\$ 6,975	\$ 34,641	\$ 253,322	\$ 222,843	\$ 4,413	\$ 35,136	\$ 262,392	-\$ 9,070
1987-88	\$ 213,634	\$ 6,975	\$ 42,000	\$ 262,609	\$ 220,934	\$ 3,597	\$ 47,957	\$ 272,488	-\$ 9,879
1988-89	\$ 245,221	\$ 6,300	\$ 15,000	\$ 266,521	\$ 237,249	\$ 4,683	\$ 16,148	\$ 258,080	\$ 8,441
1989-90	\$ 253,392	\$ 5,173	\$ 30,000	\$ 288,565	\$ 274,004	\$ 5,571	\$ 21,264	\$ 300,839	-\$ 12,274
1990-91	\$ 260,691	\$ 5,925	\$ -	\$ 266,616	\$ 266,058	\$ 4,809	\$ 2,532	\$ 273,399	-\$ 6,783
1991-92	\$ 264,591	\$ 6,450	\$ -	\$ 271,041	\$ 234,222	\$ 5,649	\$ -	\$ 239,871	\$ 31,170
1992-93	\$ 273,482	\$ 3,825	\$ -	\$ 277,307	\$ 254,430	\$ 4,713	\$ -	\$ 259,143	\$ 18,164
1993-94	\$ 270,983	\$ 3,700	\$ 21,000	\$ 295,683	\$ 276,163	\$ 3,505	\$ 20,496	\$ 300,164	-\$ 4,481
1994-95	\$ 295,500	\$ 3,200	\$ -	\$ 298,700	\$ 288,835	\$ 3,220	\$ -	\$ 292,055	\$ 6,645
1995-96	\$ 294,040	\$ 1,375	\$ -	\$ 295,415	\$ 292,860	\$ 1,180	\$ -	\$ 294,040	\$ 1,375
1996-97	\$ 229,643	\$ -	\$ -	\$ 229,643	\$ 229,643	\$ -	\$ -	\$ 229,643	\$ -
1997-98	\$ 167,169	\$ -	\$ -	\$ 167,169	\$ 175,042	\$ -	\$ -	\$ 175,042	-\$ 7,873
1998-99	\$ 151,439	\$ -	\$ -	\$ 151,439	\$ 154,159	\$ -	\$ -	\$ 154,159	-\$ 2,720
1999-00	\$ 147,934	\$ -	\$ -	\$ 147,934	\$ 152,829	\$ -	\$ -	\$ 152,829	-\$ 4,895
2000-01	\$ 165,270	\$ -	\$ -	\$ 165,270	\$ 158,561	\$ -	\$ -	\$ 158,561	\$ 6,709
2001-02	\$ 166,997	\$ -	\$ -	\$ 166,997	\$ 158,634	\$ -	\$ -	\$ 158,634	\$ 8,363
2002-03	\$ 172,639	\$ -	\$ -	\$ 172,639	\$ 169,865	\$ -	\$ -	\$ 169,865	\$ 2,774
2003-04	\$ 178,699	\$ -	\$ -	\$ 178,699	\$ 175,735	\$ -	\$ -	\$ 175,735	\$ 2,964
2004-05	\$ 415,439	\$ -	\$ -	\$ 415,439	\$ 407,849	\$ -	\$ -	\$ 407,849	\$ 7,590
2005-06	\$ 419,687	\$ -	\$ -	\$ 419,687	\$ 393,104	\$ -	\$ -	\$ 393,104	\$ 26,583
2006-07	\$ 471,970	\$ -	\$ 1,500	\$ 473,470	\$ 445,337	\$ -	\$ 1,144	\$ 446,481	\$ 26,989
2007-08	\$ 542,116	\$ -	\$ 1,368	\$ 543,484	\$ 537,469	\$ -	\$ 3,663	\$ 541,131	\$ 2,353
2008-09	\$ 597,354	\$ -	\$ 14,404	\$ 611,758	\$ 622,512	\$ -	\$ 8,998	\$ 631,510	-\$ 19,752
2009-10	\$ 639,652	\$ -	\$ 20,500	\$ 660,152	\$ 669,641	\$ -	\$ 21,068	\$ 690,709	-\$ 30,557
2010-11	\$ 669,430	\$ -	\$ 15,000	\$ 684,430	\$ 692,904	\$ -	\$ 34,502	\$ 727,406	-\$ 42,976
2011-12	\$ 694,839	\$ -	\$ -	\$ 694,839	\$ 826,078	\$ -	\$ -	\$ 826,078	-\$ 131,239
2012-13	\$ 806,826	\$ -	\$ -	\$ 806,826	\$ 804,546	\$ -	\$ -	\$ 804,546	\$ 2,280
2013-14	\$ 832,689	\$ -	\$ -	\$ 832,689	\$ 806,657	\$ -	\$ -	\$ 806,657	\$ 26,032
2014-15	\$ 861,167	\$ -	\$ -	\$ 861,167	\$ 806,396	\$ -	\$ -	\$ 806,396	\$ 54,771
2015-16	\$ 803,974	\$ -	\$ -	\$ 803,974	\$ 785,933	\$ -	\$ -	\$ 785,933	\$ 18,041
2016-17	\$ 766,195	\$ -	\$ -	\$ 766,195	\$ 817,843	\$ -	\$ -	\$ 817,843	-\$ 51,648
2017-18	\$ 987,283	\$ -	\$ -	\$ 987,283	\$ 929,538	\$ -	\$ -	\$ 929,538	\$ 57,745
2018-19	\$ 999,736	\$ -	\$ -	\$ 999,736	\$ 988,310	\$ -	\$ -	\$ 988,310	\$ 11,426
2019-20	\$ 998,205	\$ -	\$ -	\$ 998,205	\$ 1,001,763	\$ -	\$ -	\$ 1,001,763	-\$ 3,558
								<b>Net total</b>	<b>-\$ 16,054</b>

NOTES: A positive net total indicates funds owed to the Province.