Environment Canada Environnement Canada

Newfoundland Labrador

CANADA – NEWFOUNDLAND AND LABRADOR

MEMORANDUM OF AGREEMENT FOR WATER QUANTITY SURVEYS

REPORT FOR FISCAL YEAR 2015-2016

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LETTER OF TRANSMITTAL

TO: Bill Appleby
Administrator for Canada

Haseen Khan
Administrator for the Department of Municipal Affairs and Environment, Newfoundland and Labrador

We hereby submit an annual report for the fiscal year 2015-2016 covering activities under the Memorandum of Agreement for Water Quantity Surveys for Newfoundland and Labrador.

Members
Coordinating Committee

Government of Canada

René Savoie
Environment and Climate Change Canada

Government of Newfoundland and Labrador

Paula Dawe
Dept. of Municipal Affairs Environment, 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. Discussions on a new Bilateral Agreement have taken place in 2015-2016. The new Agreement will ensure the delivery of an efficient and effective hydrometric monitoring service.

During this reporting period, 5 provincial stations closed. More details on these stations are given in section 4 of this report.

In addition to the regular hydrometric activities, several construction/upgrade projects have taken place during fiscal year 2015-2016.

Currently 107 stations, over 93% of the network, are equipped with satellite telemetry and 3 stations have modem telemetry using standard phone lines which means that 96.5% of the network is reporting in real-time. Only 4 stations have no telemetry.

The actual share of the province ($785.9K) was 2.2% lower than the original estimate ($803.9K). 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 2015-2016.

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 and Conservation 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 2015-2016.

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 2015-2016
Appendix B SIGNED SCHEDULE D 2015-2016

2.0 HYDROLOGIC CONDITIONS

Streamflow and Water Level Conditions

Below are flow tables based on Apr-Dec 2015 approved data and Jan-Mar 2016 preliminary data for five major rivers in Newfoundland and Labrador. Historical Extremes updated to 2015 data. The final information can be found online for all monitored sites in Newfoundland and Labrador at: www.wateroffice.ec.gc.ca

Rocky River 02ZK001 (Eastern NL)
(Drainage Area 301 KM^2)

Year 2015/2016	MEAN FLOW (M/3S)	FOR THE MONTH		HISTORICAL EXTREMES **			
		MAXIMUM (DAY)	MINIMUM (DAY)	MONTHLY MAXIMUM (YEAR)	MONTHLY MINIMUM (YEAR)	DAILY MAXIMUM (YEAR)	DAILY MINIMUM (YEAR)
April	36.9	76.9	30.9	311	8.33	2460	7.2
2015		(30)	(23)	(2010)	(1993)	(1983)	(1993)
May	961	2020	88.5	1510	106	2690	11.8
2015	E	(31)	(1)	(2012)	(1967)	(1971)	(1975)
June	1020	1980	300	1810	265	2990	116
2015	E	(1)	(30)	(1985)	(2005)	(1985)	(2012)
July	244	382	176	638	119	1330	71.4
2015		(18)	(31)	(1985)	(1976)	(1980)	(1976)
August	196	304	130	495	102	1320	64
2015		(9)	(28)	(1989)	(1988)	(1967)	(2008)
September	238	316	172	521	74.2	827	59
2015		(5)	(29)	(1976)	(2012)	(1976)	(1984)
October	203	228	172	515	100	784	78.4
2015		(5)	(30)	(1978)	(1973)	(2012)	(1973)
November	190	235	136	488	65.3	695	51
2015		(28)	(23)	(1995)	(2002)	(1980)	(1974)
December	148	213	122	218	36.3	410	27.5
2015	E	(1)	(31)	(1995)	(1974)	(2005)	(1974)
January	88.4	106	71.9	98.9	22.4	119	19
2016	E	(1)	(31)	(1969)	(1975)	(2011)	(1993)
February	57.1	68.7	46.9	86.2	14.9	90.6	11.8
2016	E	(1)	(29)	(1969)	(1993)	(1969)	(1993)
March	37.4	45.4	31.1	78.7	9.64	119	8.2
2016		(1)	(31)	(1969)	(1993)	(1979)	(1993)

Deficiency for the period or daily number. 25% are less than the lower quartile (below normal)
Excessive for the period or daily number. 25% are greater than the upper quartile (above normal)
Record for the period or daily number (Preliminary)

Gander River 02YQ001 (Central NL)
(Drainage Area 4400 KM^2)

Year 2015/2016	MEAN FLOW (M/3S)	FOR THE MONTH		HISTORICAL EXTREMES **			
		MAXIMUM (DAY)	MINIMUM (DAY)	MONTHLY		DAILY	
				MAXIMUM (YEAR)	MINIMUM (YEAR)	MAXIMUM (YEAR)	MINIMUM (YEAR)
April	152	574	37.5	513	44.4	925	22.8
2015	D	(30)	(4)	(1987)	(1967)	(1993)	(1950)
May	275	605	96	451	90.3	761	50.4
2015		(1)	(31)	(1967)	(1958)	(2001)	(2006)
June	64.4	91.2	43.9	198	37.7	336	18.1
2015		(1)	(30)	(2010)	(1979)	(2010)	(1979)
July	37.6	72.4	20.5	148	13.9	215	9
2015		(28)	(22)	(2011)	(1975)	(2011)	(1975)
August	41.2	66.1	23.1	179	6.92	378	4.8
2015		(1)	(30)	(1980)	(1987)	(1980)	(1987)
September	23	26	20.9	286	4.16	747	2.8
2015	D	(20)	(2)	(2013)	(1961)	(2010)	(1961)
October	22.2	32.8	19.3	269	9.88	597	3.3
2015	D	(31)	(12)	(1981)	(1950)	(2003)	(1961)
November	101	125	36.8	242	37.2	398	14.8
2015		(26)	(1)	(1962)	(1961)	(2003)	(1961)
December	79.8	112	46.3	272	36.9	566	28.4
2015	D	(5)	(31)	(2004)	(1985)	(2010)	(1985)
January	27	44	17.7	352	36.3	1170	25.3
2016	DR	(1)	(31) R	(1983)	(1985)	(1983)	(1985)
February	133	412	18.5	288	18.6	688	14.8
2016		(28)	(1)	(1969)	(1961)	(1984)	(1961)
March	174	389	60.3	275	17.2	560	9.8
2016	E	(3)	(30)	(1988)	(1950)	(1992)	(1961)

Deficiency for the period or daily number. 25% are less than the lower quartile (below normal)
Excessive for the period or daily number. 25% are greater than the upper quartile (above normal)
Record for the period or daily number (Preliminary)

Upper Humber River 02YL001 (Western NL)
(Drainage Area 2110 KM^2)

Year 2015/2016	MEAN FLOW (M/3S)	FOR THE MONTH		HISTORICAL EXTREMES **			
		MAXIMUM (DAY)	MINIMUM (DAY)	MONTHLY		DAILY	
				MAXIMUM (YEAR)	MINIMUM (YEAR)	MAXIMUM (YEAR)	MINIMUM (YEAR)
April	61.3	360	15.6	288	19.2	780	9.2
2015	D	(30)	(5)	(1934)	(1967)	(2013)	(1959)
May	334	479	173	383	127	879	35.8
2015	E	(29)	(15)	(1993)	(1983)	(1993)	(1983)
June	145	438	37.5	354	16.7	1010	6.48
2015		(2)	(30)	(1933)	(2012)	(1984)	(2012)
July	42.5	117	19.9	140	9.3	555	3.94
2015		(25)	(11)	(1939)	(1987)	(1933)	(1986)
August	57.6	137	24.2	103	3.91	447	1.59
2015		(11)	(5)	(1973)	(1940)	(1973)	(1940)
September	90.3	276	23.6	162	15.2	533	1.59
2015	E	(15)	(30)	(1944)	(1946)	(2012)	(1940)
October	104	271	36.1	167	24.7	530	7.96
2015	E	(3)	(1)	(1977)	(1948)	(1957)	(1954)
November	108	362	28.9	177	42.6	813	8.78
2015		(29)	(22)	(1962)	(1986)	(1935)	(1948)
December	46.8	189	16.2	156	11.4	736	6.75
2015		(1)	(31)	(1954)	(1986)	(1935)	(1986)
January	13.4	15.9	11.8	129	10.2	663	4.02
2016	D	(1)	(26)	(1950)	(1971)	(1983)	(1990)
February	49.8	167	10.4	106	5.91	348	3.7
2016	E	(29)	(4)	(1969)	(1975)	(1969)	(1993)
March	61.2	168	17.8	141	7.8	530	4
2016	E	(1)	(27)	(1979)	(1959)	(1936)	(1992)

Deficiency for the period or daily number. 25% are less than the lower quartile (below normal)
Excessive for the period or daily number. 25% are greater than the upper quartile (above normal)
Record for the period or daily number (Preliminary)

02ZB001 Isle Aux Morts River (South Western NL)
(Drainage Area 205 KM^2)

Year 2015/2016	MEAN FLOW (M/3S)	FOR THE MONTH		HISTORICAL EXTREMES **			
		MAXIMUM (DAY)	MINIMUM (DAY)	MONTHLY		DAILY	
				MAXIMUM (YEAR)	MINIMUM (YEAR)	MAXIMUM (YEAR)	MINIMUM (YEAR)
April	16.9	62.8	3.49	46.3	3.62	325	0.696
2015	D	(28)	(10)	(1994)	(1967)	(2003)	(2004)
May	45.3	82.1	22.8	51.1	6.16	226	1.45
2015	E	(21)	(9)	(1994)	(1986)	(1972)	(2012)
June	13.7	45	4.21	34.7	2.01	259	0.283
2015		(17)	(29)	(1972)	(2012)	(1985)	(2012)
July	11.1	148	0.888	22.7	1.17	148	0.35
2015	E	(29) R	(20)	(1981)	(1989)	(2015)	(1989)
August	8.33	64.2	1.5	17.9	1.39	124	0.34
2015		(10)	(21)	(2007)	(1978)	(1990)	(1978)
September	5.61	23.7	0.967	26.6	3.53	176	0.71
2015	D	(15)	(30)	(2012)	(1973)	(2005)	(1969)
October	21	96.2	2.14	31	5.65	178	0.985
2015	E	(30)	(9)	(1972)	(1963)	(1977)	(2014)
November	15.7	85.7	2.99	38.3	7.7	348	1.6
2015		(24)	(21)	(1967)	(2000)	(2006)	(1970)
December	9.87	51.5	2.94	43	3.13	434	0.83
2015		(12)	(10)	(1990)	(1994)	(1990)	(2007)
January	4.52	14.4	2.28	24	1.22	219	0.57
2016		(12)	(10)	(1986)	(1991)	(1986)	(1991)
February	17.2	81.8	2.04	31.1	0.923	243	0.41
2016	E	(26)	(16)	(1996)	(1975)	(1996)	(1991)
March	7.88	57	1.58	38.9	0.737	410	0.34
2016		(3)	(26)	(1979)	(2004)	(1996)	(1987)

Deficiency for the period or daily number. 25% are less than the lower quartile (below normal)
Excessive for the period or daily number. 25% are greater than the upper quartile (above normal)
Record for the period or daily number (Preliminary)

03QC001 Eagle River (Labrador)
(Drainage Area 10900 KM^2)

Year 2015/2016	MEAN FLOW (M/3S)	FOR THE MONTH		HISTORICAL EXTREMES **			
		MAXIMUM (DAY)	MINIMUM (DAY)	MONTHLY		DAILY	
				MAXIMUM (YEAR)	MINIMUM (YEAR)	MAXIMUM (YEAR)	MINIMUM (YEAR)
April	36.9	76.9	30.9	311	8.33	2460	7.2
2015		(30)	(23)	(2010)	(1993)	(1983)	(1993)
May	961	2020	88.5	1510	106	2690	11.8
2015	E	(31)	(1)	(2012)	(1967)	(1971)	(1975)
June	1020	1980	300	1810	265	2990	116
2015	E	(1)	(30)	(1985)	(2005)	(1985)	(2012)
July	244	382	176	638	119	1330	71.4
2015		(18)	(31)	(1985)	(1976)	(1980)	(1976)
August	196	304	130	495	102	1320	64
2015		(9)	(28)	(1989)	(1988)	(1967)	(2008)
September	238	316	172	521	74.2	827	59
2015		(5)	(29)	(1976)	(2012)	(1976)	(1984)
October	203	228	172	515	100	784	78.4
2015		(5)	(30)	(1978)	(1973)	(2012)	(1973)
November	190	235	136	488	65.3	695	51
2015		(28)	(23)	(1995)	(2002)	(1980)	(1974)
December	148	213	122	218	36.3	410	27.5
2015	E	(1)	(31)	(1995)	(1974)	(2005)	(1974)
January	88.4	106	71.9	98.9	22.4	119	19
2016	E	(1)	(31)	(1969)	(1975)	(2011)	(1993)
February	57.1	68.7	46.9	86.2	14.9	90.6	11.8
2016	E	(1)	(29)	(1969)	(1993)	(1969)	(1993)
March	37.4	45.4	31.1	78.7	9.64	119	8.2
2016		(1)	(31)	(1969)	(1993)	(1979)	(1993)

Deficiency for the period or daily number. 25% are less than the lower quartile (below normal)
Excessive for the period or daily number. 25% are greater than the upper quartile (above normal)
Record for the period or daily number (Preliminary)

3.0 COORDINATORS MEETINGS

The coordinators met in person twice and frequent e-mail correspondence and conference calls took place in 2015-2016. Discussions range from operating cost, capital plan, and bilateral agreement.

4.0 NETWORK CHARACTERISTICS

Water Survey of Canada operates 107 hydrometric stations in Newfoundland and Labrador. The station classifications are listed in the next Table. 5 provincial stations were decommissioned in 2015-2016.

02ZM023 Outer Cove Brook below Airport (Nov 13 2015)

02ZM024 Outer Cove Brook at Clovelly Golf Course (Nov 13 2015)

03OB008 Houston Creek (June 5 2015)

03OB004 James Creek (Mar 13 2016)

03OA010 Flora Creek (Mar 14 2016)

Also, 2 cableways were dismantled at

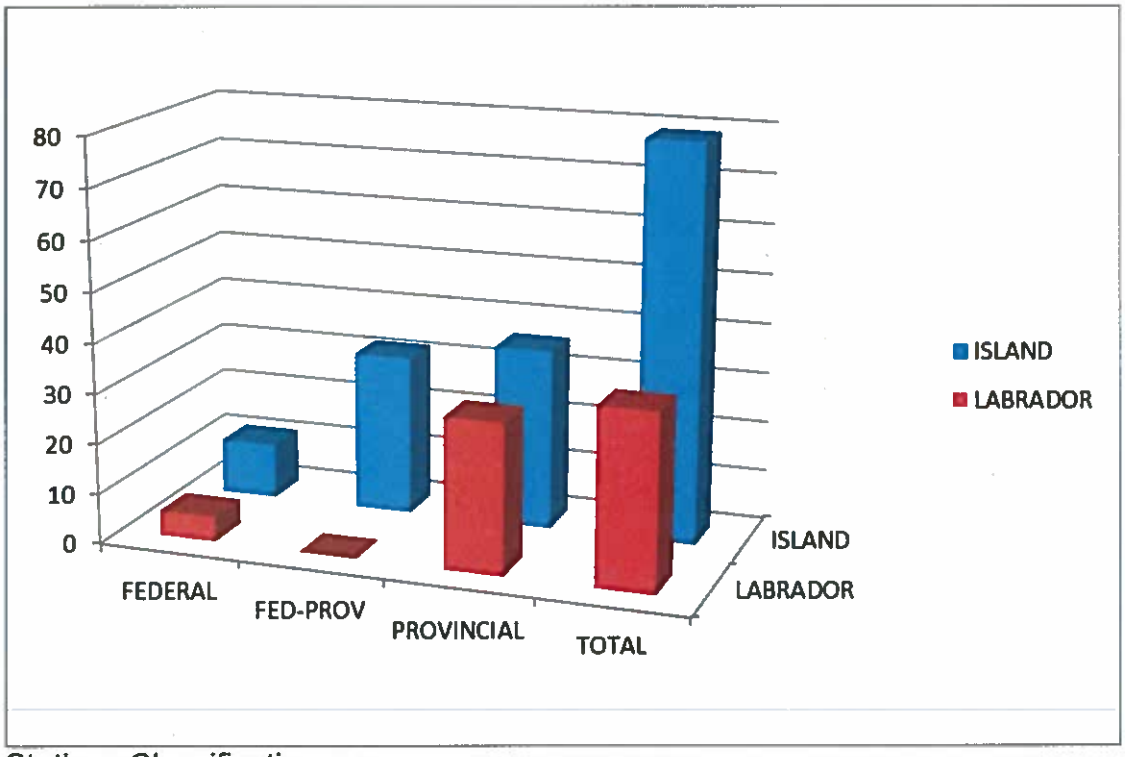
02YR003 Indian Bay Brook

02ZK005 Sheffield River

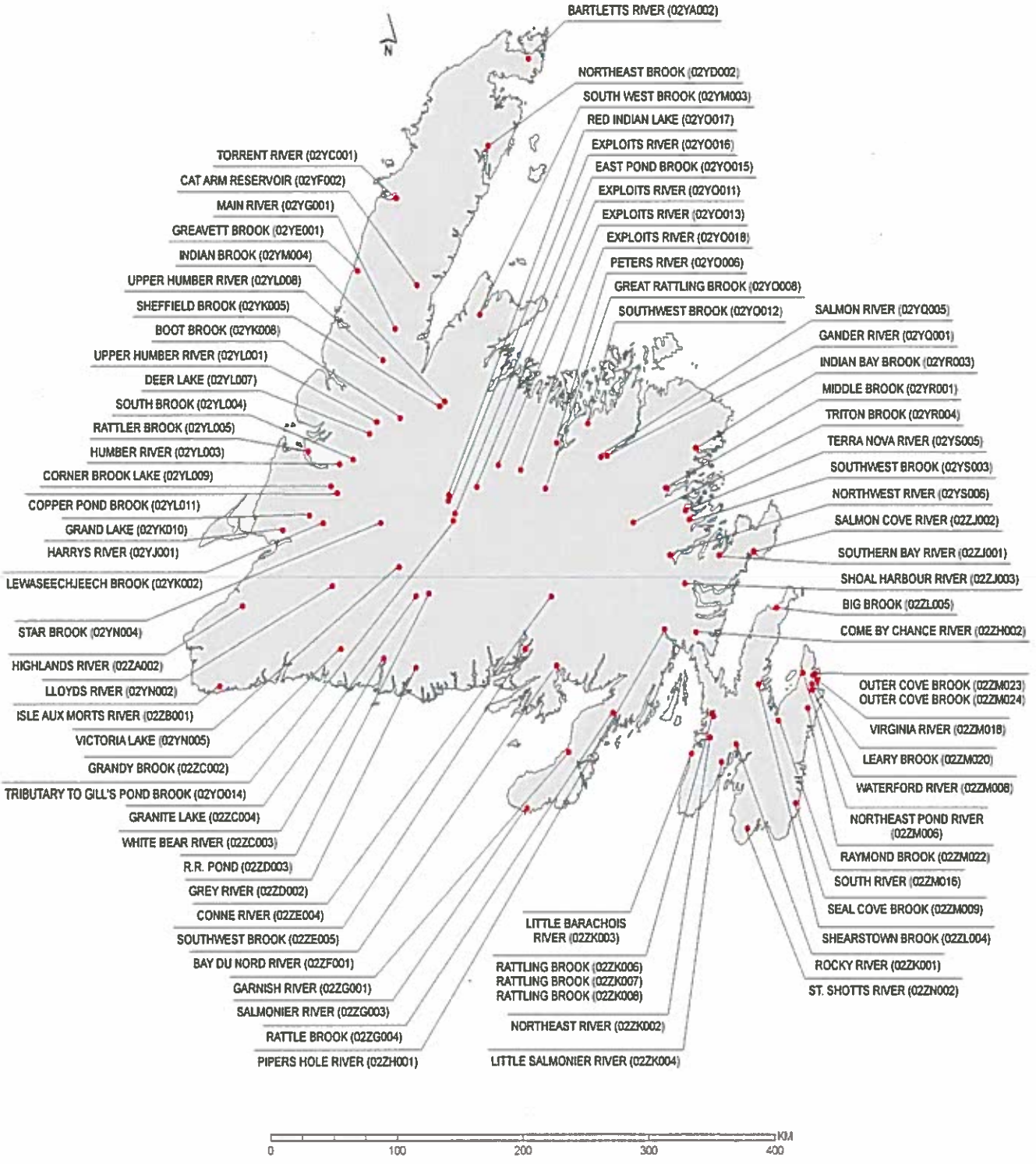
Water Survey of Canada also operates 5 precipitations stations and takes water samples at 7 different sites for water quality purpose on behalf of the Newfoundland and Labrador Department of Environment and Conversation. These sites are converted in station units in order to have their cost calculated under this agreement.

Under the Canada–Newfoundland and Labrador Memorandum of Agreement, 107 stations were operated in 2015-2016. The complete station list is available in Appendix A. The stations classifications are as follow:

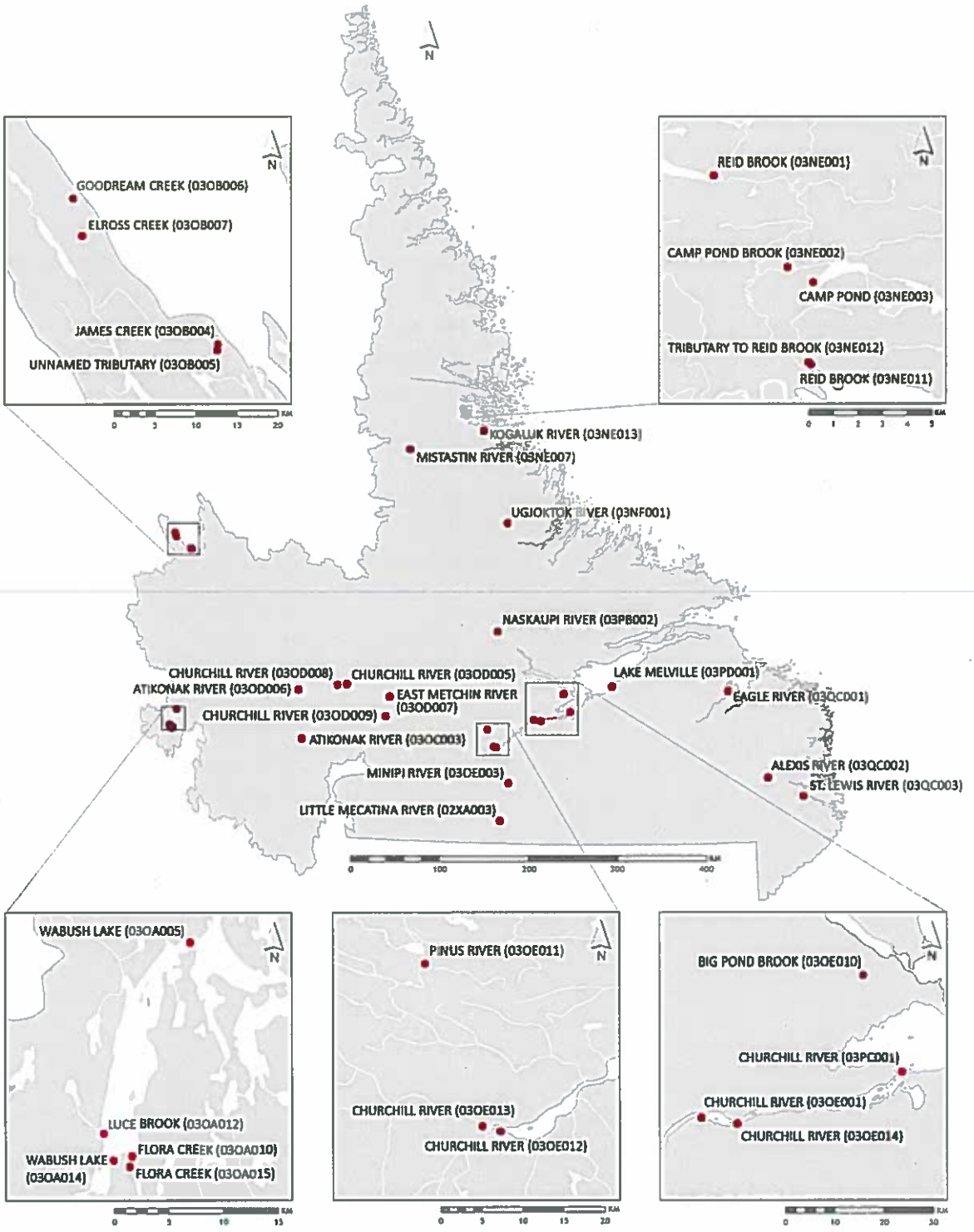
CLASSIFICATION	ISLAND	LABRADOR	TOTAL
FEDERAL	11	5	**16**
FED-PROV	32	0	**32**
PROVINCIAL	29	28	**57**
TOTAL	**72**	**35**	**107**



Stations Classification



Hydrometric network on the Island



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 and Conservation was credited with the total amount of $32,685 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 2015-2016.

STREAMFLOW AND WATER LEVEL COSTS FOR NEWFOUNDLAND AND LABRADOR

	2015/16	2015/16
OPERATIONAL	**Planned**	**Actuals**
Salaries (Including benefits 20%)	$496,921	$ 523,459
Hydrometric Operations O&M	$339,738	$295,159
Real Property Credit	-$7,750	-$7,750
Real Time Web Cam	-$7,350	-$7,350
Weather Station	-$4,305	-$4,305
Basin Delineation	-$13,280	-$13,280
TOTALS	**$803,974**	**$785,933**

SUMMARY OF TOTAL EXPENDITURE 2015-2016

CATEGORY	FEDERAL	Newfoundland and Labrador	TOTAL
Hydrometric Operations (O&M)	$177,306	$262,474	$439,780
Capital (Hydro acoustic Equipment)	0	0	0
Capital (Vehicles)	0	0	0
Salaries +20%	$210,412	$ 523,459	$733,871
Total	**$387,718**	**$785,933**	**$1,173,651**

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

O&M expenditures details

ITEM	ACTUAL EXPENDITURES (FISCAL YEAR 15/16)
025 - TRAVEL-PUBLIC SERVANTS	$ 47,046
021 - POSTAGE and FREIGHT	$ 5,195
022 - TELECOMMUNICATION SERVICES	$ 5,226
044 - TRAINING AND EDUCATIONAL SERVICES	$ 787
089 - OTHER SERIVES	$ 2,905
052 - RENTAL OF INFORMATICS EQUIPMENT	$ 2,258
117 - MISCELLANEOUS GOODS AND PRODUCTS	$ 7,391
114 - WOOD, PAPER AND WOOD PRODUCTS	$ -
115 - PERSONAL GOODS	$ 2,149
325 - MISCELLANEOUS EXPENDITURES	$ 250
040 - BUSINESS SERVICES	$ 1,138
112 - MINERAL PRODUCTS	$ 23,845
111 - FOOD, FEED, BEVERAGES AND TOBACCO	$ 34
121 - MACHINERY AND MACHINERY PARTS	$ 1,046
124 - EQUIPMENT INCLUDING PARTS	$ 18,556
046 - PROTECTION SERVICES	$ 293
065 - REPAIR OF MACHINERY AND EQUIPMENT	$ 14,029
043 - SCIENTIFIC AND RESEARCH SERVICES	$ 5,422
116 - METALS AND METAL PRODUCTS	$ 363
063 - REPAIR OF BUILDINGS	$ 1,092
070 - UTILITY SERVICES	$ 2,234
056 - RENTAL OF AIRCRAFT AND SHIPS	$ 153,811
060 - REPAIR OF ENGINEERING WORKS	$ 90
Total	$ 295,159

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 and Conservation on a case by case basis.

Appendix A

SCHEDULE C 2015-2016 – STATION LIST

Station #	Station Name	Location	Class	Date
02ZF001	BAY DU NORD RIVER AT BIG FALLS	NFLD	Federal 4	1950
02YQ001	GANDER RIVER AT BIG CHUTE	NFLD	Federal 4	1949
02YJ001	HARRYS RIVER BELOW HIGHWAY BRIDGE	NFLD	Federal 4	1968
02YL003	HUMBER RIVER AT HUMBER VILLAGE BRIDGE	NFLD	Federal 4	1982
02ZB001	ISLE AUX MORTS RIVER BELOW HIGHWAY BRIDGE	NFLD	Federal 1	1962
02YG001	MAIN RIVER AT PARADISE POOL	NFLD	Federal 4	1986
02YD002	NORTHEAST BROOK NEAR RODDICKTON	NFLD	Federal 4	1959
02ZK001	ROCKY RIVER NEAR COLINET	NFLD	Federal 1	1948
02YS003	SOUTHWEST BROOK AT TERRA NOVA NATIONAL PARK	NFLD	Federal 1	1967
02YC001	TORRENT RIVER AT BRISTOL'S POOL	NFLD	Federal 4	1980
02YL001	UPPER HUMBER RIVER NEAR REIDVILLE	NFLD	Federal 1	1928
03QC002	ALEXIS RIVER NEAR PORT HOPE SIMPSON	LAB	Federal 4	1978
03OE001	CHURCHILL RIVER ABOVE UPPER MUSKRAT FALLS	LAB	Federal 4	1948
03QC001	EAGLE RIVER ABOVE FALLS	LAB	Federal 4	1966
02XA003	LITTLE MECATINA RIVER ABOVE LAC FOURMONT	LAB	Federal 2	1979
03NF001	UGJOKTOK RIVER BELOW HARP LAKE	LAB	Federal 4	1979
02YA002	BARTLETTS RIVER NEAR ST. ANTHONY	NFLD	Fed-Prov 3	1986
02ZH002	COME-BY-CHANCE RIVER NEAR GOOBIES	NFLD	Fed-Prov 3	1961
02ZE004	CONNE RIVER AT OUTLET OF CONNE POND	NFLD	Fed-Prov 3	1988
02YO011	EXPLOITS RIVER BELOW NOEL PAULS BROOK	NFLD	Fed-Prov 3	1985
02ZG001	GARNISH RIVER NEAR GARNISH	NFLD	Fed-Prov 3	1958
02ZC002	GRANDY BROOK BELOW TOP POND BROOK	NFLD	Fed-Prov 3	1982
02YO008	GREAT RATTLING BROOK ABOVE TOTE RIVER CONFLUENCE	NFLD	Fed-Prov 3	1984
02YE001	GREAVETT BROOK ABOVE PORTLAND CREEK POND	NFLD	Fed-Prov 3	1983
02ZA002	HIGHLANDS RIVER AT TRANS CANADA HIGHWAY	NFLD	Fed-Prov 3	1982
02YR003	INDIAN BAY BROOK NEAR NORTHEAST ARM	NFLD	Fed-Prov 3	1981
02YK002	LEWASSEECHJEECH BROOK AT LITTLE GRAND LAKE	NFLD	Fed-Prov 3	1952
02YN002	LLOYDS RIVER BELOW KING GEORGE IV LAKE	NFLD	Fed-Prov 3	1980
02YR001	MIDDLE BROOK NEAR GAMBO	NFLD	Fed-Prov 3	1959
02ZK002	NORTHEAST RIVER NEAR PLACENTIA	NFLD	Fed-Prov 3	1979
02YS006	NORTHWEST RIVER AT TERRA NOVA NATIONAL PARK	NFLD	Fed-Prov 3	1994
02YO006	PETERS RIVER NEAR BOTWOOD	NFLD	Fed-Prov 3	1981
02ZH001	PIPERS HOLE RIVER AT MOTHERS BROOK	NFLD	Fed-Prov 3	1952

02ZG004	RATTLE BROOK NEAR BOAT HARBOUR	NFLD	Fed-Prov 3	1981
02YL005	RATTLER BROOK NEAR MCIVERS	NFLD	Fed-Prov 3	1985
02YQ005	SALMON RIVER NEAR GLENWOOD	NFLD	Fed-Prov 3	1987
02ZG003	SALMONIER RIVER NEAR LAMALINE	NFLD	Fed-Prov 3	1980
02ZM009	SEAL COVE BROOK NEAR CAPPAHAYDEN	NFLD	Fed-Prov 3	1979
02YK005	SHEFFIELD BROOK NEAR TRANS CANADA HIGHWAY	NFLD	Fed-Prov 3	1972
02ZJ003	SHOAL HARBOUR RIVER NEAR CLARENVILLE	NFLD	Fed-Prov 3	1985
02ZM016	SOUTH RIVER NEAR HOLYWOOD	NFLD	Fed-Prov 3	1983
02ZJ001	SOUTHERN BAY RIVER NEAR SOUTHERN BAY	NFLD	Fed-Prov 3	1976
02YO012	SOUTHWEST BROOK AT LEWISPORTE	NFLD	Fed-Prov 3	1989
02YM003	SOUTH WEST BROOK NEAR BAIE VERTE	NFLD	Fed-Prov 3	1980
02YS005	TERRA NOVA RIVER AT GLOVERTOWN	NFLD	Fed-Prov 3	1985
02YL008	UPPER HUMBER RIVER ABOVE BLACK BROOK	NFLD	Fed-Prov 3	1988
02ZM018	VIRGINIA RIVER AT PLEASANTVILLE	NFLD	Fed-Prov 3	1984
02ZM008	WATERFORD RIVER AT KILBRIDE	NFLD	Fed-Prov 3	1974
02ZL005	BIG BROOK AT LEAD COVE	NFLD	Prov 1	1985
02YK008	BOOT BROOK AT TRANS-CANADA HIGHWAY	NFLD	Prov 1	1985
02YL011	COPPER POND BROOK NEAR CORNER BROOK LAKE	NFLD	Prov 1	1994
02YL009	CORNER BROOK LAKE AT LAKE OUTLET	NFLD	Prov 1	1990
02YL007	DEER LAKE AT DEER LAKE	NFLD	Prov 1	1987
02YO015	EAST POND BROOK BELOW EAST POND [Duck Pond]	NFLD	Prov 1	2006
02YO014	TRIBUTARY TO GILL'S BROOK [Duck Pond]	NFLD	Prov 1	2006
02YK010	GRAND LAKE EAST OF GRAND LAKE BROOK	NFLD	Prov 1	1988
02YO013	EXPLOIT RIVER NEAR BADGER	NFLD	Prov 1	2003
02YO016	EXPLOITS RIVER NEAR MILLERTOWN	NFLD	Prov 1	2006
02YO018	EXPLOITS RIVER at Charlie Edwards Point (above Goodyears Dam)	NFLD	Prov1	2009
02YO017	Red Indian Lake at Indian Point	NFLD	Prov1	2009
02ZC004	GRANITE LAKE AT EAST END	NFLD	Prov2	2001
02ZD002	GREY RIVER NEAR GREY RIVER	NFLD	Prov2	1969
02YM004	INDIAN BROOK DIVERSION ABOVE BIRCHY LAKE	NFLD	Prov 1	1990
02ZM020	LEARY BROOK AT PRINCE PHILIP DRIVE	NFLD	Prov 1	1985
02ZK003	LITTLE BARACHOIS RIVER NEAR PLACENTIA	NFLD	Prov 1	1983
02ZK004	LITTLE SALMONIER RIVER NEAR NORTH HARBOUR	NFLD	Prov 1	1983
02ZK007	RATTLING BROOK BIG POND	NFLD	Prov2	2006
02ZK006	RATTLING BROOK BELOW BRIDGE	NFLD	Prov2	2006
02ZK008	Rattling Brook below Plant Discharge	NFLD	Prov1	2009
02ZM006	NORTHEAST POND RIVER AT NORTHEAST POND	NFLD	Prov 1	1953
02ZM022	RAYMOND BROOK AT OUTLET OF BAY BULLS BIG POND	NFLD	Prov 1	1988
02ZJ002	SALMON COVE RIVER NEAR CHAMPNEYS	NFLD	Prov 1	1983
02ZL004	SHEARSTOWN BROOK AT SHEARSTOWN	NFLD	Prov 1	1983
02YL004	SOUTH BROOK AT PASADENA	NFLD	Prov 1	1983

02ZE005	SOUTHWEST BROOK BELOW SOUTHWEST POND	NFLD	Prov 1	2006
02ZN002	ST. SHOTTS RIVER NEAR TREPASSEY	NFLD	Prov 1	1985
02YN004	STAR BROOK ABOVE STAR LAKE	NFLD	Prov	2000
02YR004	TRITON BROOK ABOVE GAMBO POND	NFLD	Prov 1	2002
02YN005	VICTORIA LAKE AT NORTHEAST CONTROL STRUCTURE	NFLD	Prov2	2003
02ZD003	R.R. POND NEAR GRANITE LAKE	NFLD	Prov2	2003
02YF002	CAT ARM RESERVOIR NEAR SPILLWAY	NFLD	Prov2	1994
02ZC003	WHITE BEAR RIVER ABOVE BIG INDIAN BROOK	NFLD	Prov2	1996
02ZM023	Outer Cove Brook at Clovelly Golf Course	NFLD	Prov	2012
02ZM024	Outer Cove Brook Below Airport	NFLD	Prov	2012
03OC003	ATIKONAK RIVER ABOVE PANCHIA LAKE	LAB	Prov2	1972
03OE010	BIG POND BROOK BELOW BIG POND	LAB	Prov 1	1993
03NE003	CAMP POND AT SOUTHWEST END	LAB	Prov	2002
03NE002	CAMP POND BROOK BELOW CAMP POND	LAB	Prov	2002
03OD007	EAST METCHIN RIVER BELOW HIGHWAY BRIDGE	LAB	Prov	1998
03OA005	Wabush Lake at Lake Outlet	LAB	Prov	2006
03OA010	Flora Creek below Flora Lake	LAB	Prov	2006
03OA012	Luce Brook below Tinto Pond	LAB	Prov	2006
03OA014	Wabush Lake at Dolamite Rd	LAB	Prov	2006
03OE003	MINIPI RIVER BELOW MINIPI LAKE	LAB	Prov	1979
03PB002	NASKAUPI RIVER BELOW NASKAUPI LAKE	LAB	Prov	1978
03OE011	PINUS RIVER	LAB	Prov	1998
03NE011	REID BROOK (below Tributary) ABOVE RAPIDS	LAB	Prov	2003
03NE001	REID BROOK AT OUTLET OF REID POND	LAB	Prov	2002
03NE012	TRIBUTARY (to Reid Brok) ABOVE RAPIDS	LAB	Prov	2003
03OD008	CHURCHILL RIVER ABOVE CHURCHILL FALLS TAILRACE	LAB	Prov	2008
03OD009	CHURCHILL RIVER BELOW METCHIN RIVER	LAB	Prov	2008
03OE013	CHURCHILL RIVER ABOVE GRIZZLE RAPIDS	LAB	Prov	2008
03OE012	CHURCHILL RIVER BELOW GRIZZLE RAPIDS	LAB	Prov	2008
03OE014	CHURCHILL RIVER 6.15KMS BELOW MUSKRAT FALLS	LAB	Prov	2008
03PD001	Lake Melville East of Little River	LAB	Prov1	2010
03PC001	Churchill River at English Point (near Mud Lake)	LAB	Prov1	2010
03OB004	James Creek above Bridge (Shefferville)	LAB	Prov2	2010
03OB005	Unnamed Tributary below Settling Pond (Shefferville)	LAB	Prov2	2010
03OB006	Goodream Creek 2km Northwest of Timmins 6	LAB	Prov2	2011
03OB007	Elross Creek below Pinette Lake Inflow	LAB	Prov2	2011
03NE007	Mistastin River Below Mistastin Lake	LAB	Prov2	2012
03NE013	Kogaluk River below Cabot Lake	LAB	Prov2	2012
03OA015	Flora Creek Below Trans Labrador Highway	LAB	Prov2	2012
03QC003	St Lewis River above St Lewis Inlet	LAB	Prov2	2012

PRECIP STATIONS				
	ADIES LAKE	NFLD	Prov	
	BURGEO ROAD	NFLD	Prov	
	GLOVER ISLAND	NFLD	Prov	
	HINDS LAKE	NFLD	Prov	
	HOWLEY ROAD	NFLD	Prov	
ASHKUI WATER QUALITY SAMPLING SITES, GRAB SAMPLES 3 TIMES PER YEAR BY WSC				
	CARTER BASIN	LAB	Prov	
	CAPE CARIBOU RIVER	LAB	Prov	
	Dominion Lake	LAB	Prov	
	Kenamu River	LAB	Prov	
	Seal Lake Narrows	LAB	Prov	
	Susan River	LAB	Prov	
	Wuchusk lake	LAB	Prov	

Appendix B SIGNED SCHEDULE D 2015-2016

NEWFOUNDLAND AND LABRADOR 2015-2016

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 2015-2016 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	$89,261	$322,999	$0	$412,260
b) Streamflow and Water Level Installations - Labrador	$240,344	$173,922	$0	$414,266
c) Humber Met Stations	$10,133	$0		$10,133
d) Construction & Major Maintenance (LCM)	$0	$0	$0	$0
e) Station Decommissioning	$0	$0	$0	$0
f) Hydrometric Workstation	$0	$0	$0	$0
g) Real Property Credit for Federal stations on Provincial Crown Land	($7,750)	$0	$0	($7,750)
h) Real Time Webcam	($7,350)	$0	$0	($7,350)
i) Weather Stations	($4,305)	$0		($4,305)
j) Basin Delineation & Information	($13,280)	$0	$0	($13,280)
k) Special Projects*	$0	$0	$0	$0
TOTAL	$307,052	$496,921	$0	$803,974

M. G. Goebel, P.Eng. — JUL 21 2015 (Date)
Assistant Deputy Minister
Environment Branch
Department of Environment and Conservation
Administrator for Province of Newfoundland and Labrador

Bill Appleby — 20150723 (Date)
Regional Director,
Meteorological Service of Canada
Operations - Atlantic
Environment Canada
Administrator for Canada

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