

CANADA-NEWFOUNDLAND and LABRADOR WATER QUALITY MONITORING AGREEMENT

ANNUAL WORK SCHEDULE 2014 - 2015



Water Resources Management Division
Department of Environment & Conservation
St. John's, Newfoundland and Labrador

Atlantic Water Quality Monitoring - Surveillance de
la qualité de l'eau de l'Atlantique
Environment Canada - Environnement Canada
Dartmouth, Nova Scotia

**Canada-Newfoundland and Labrador
Water Quality Monitoring Agreement
Annual Work Schedule –
Resource Commitment & Work Shared Activities
2014-2015**

This document outlines cost and work shared activities to be carried out during the current fiscal year under the Canada-Newfoundland and Labrador Water Quality Monitoring Agreement. The document has been reviewed and approved by the Administrators of the Agreement.



David Boerner
Administrator, on behalf of
Environment Canada
Government of Canada



Martin Goebel
Administrator, on behalf of
Department of Environment and Conservation
Government of Newfoundland and Labrador

Schedule A

Agreement Committees

Canada-Newfoundland and Labrador Water Quality Monitoring Agreement

The following officials are named to administer this Agreement according to Article X under the Canada-Newfoundland and Labrador Water Quality Monitoring Agreement:

Mr. David Boerner	Environment Canada, on behalf of Canada
Mr. Martin Goebel	Department of Environment & Conservation, on behalf of Newfoundland & Labrador

The Administrators will be assisted by a Coordinating Committee consisting of the following:

Ms. Hélène Bouchard	Environment Canada (Water Quality Monitoring & Surveillance)
Ms. Christine Garron	Environment Canada (Water Quality Monitoring & Surveillance)
Mr. Art Cook	Environment Canada (Atlantic Laboratory for Environmental Testing)
Mr. Haseen Khan	Water Resources Management Division, Newfoundland & Labrador Department of Environment & Conservation
Ms. Paula Dawe	Water Resources Management Division, Newfoundland & Labrador Department of Environment & Conservation

Schedule B

Shared Activities for Fiscal Year 2014-2015

Schedule B –Shared Activities 2014-2015

Activity	Responsible Agency	Remarks
Cost-Shared and Work-Shared Ambient Water Quality Monitoring and Data Management Activities	Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada	Refer to Table B.1 and Figure A-1 for sampling locations in Newfoundland Refer to Table B.2 and Figure A-2 for sampling locations in Labrador Refer to Table B.3 for laboratory analysis details Refer to Table B.4 for Shared Activities
Additional Cost-Shared Core Activities	Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada	Refer to Table B.5 for Shared Activities
Work-Shared Special Projects	Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada	Refer to Table B.4 for shared activities related to ambient water quality monitoring and data management Refer to Table B.5 for cost-shared core activities. Refer to Table B.6 for work-shared special projects

Note: Details regarding NL efforts for all additional technical projects/activities and the scope of work is documented separately within the NL Water Resources Management Division.

Table B.1: Index Station Location, Designation and Sampling Frequency 2014-2015 for Newfoundland Stations. Core CESI stations are shaded gray.

Station #	Description	Latitude	Longitude	Designation	Samples/year	Classification
EASTERN REGION						
NF02ZK0005	NORTHEAST RIVER NEAR PLACENTIA	47 16 23	-53 50 25	Fed/Prov	8	CABIN Annual site 09-10/ 11-12 /12-13/ 13-14 & 14-15 / Hydrometric / Core CESI Station
NF02ZL0029	GOULDS BROOK NEAR MAKINSONS	47 30 18	-53 17 28	Fed/Prov	5	CABIN site 09-10 / Core CESI Station
NF02ZM0004	WATERFORD RIVER AT COMMONWEALTH AVENUE	47 31 19	-52 48 29	Provincial	4	Local CESI Station
NF02ZM0009	WATERFORD RIVER AT KILBRIDE	47 31 46	-52 44 34	Fed/Prov	4	RTWQ / Hydrometric / Local CESI Station / Chemical Management Plan
NF02ZM0014	VIRGINIA RIVER AT THE BOULEVARD	47 35 02	-52 41 29	Provincial	4	Local CESI Station / CABIN site 10-11
NF02ZM0015	QUIDI VIDI LAKE AT OUTLET	47 35 02	-52 40 51	Provincial	4	
NF02ZM0016	RENNIE'S RIVER AT CARNELL DRIVE	47 34 40	-52 42 03	Provincial	4	Local CESI Station
NF02ZM0020	BROAD COVE BROOK NEAR ST. PHILLIPS	47 35 53	-52 52 53	Provincial	4	CABIN site 08-09 / Local CESI Station
NF02ZM0098	VIRGINIA RIVER AT HEADWATERS	47 35 56	-52 45 17	Provincial	4	CABIN site 08-09 / Comp Guidelines Site / Local CESI Station
NF02ZM0109	MUNDY POND AT OUTLET	47 33 40	-52 44 38	Provincial	4	
NF02ZM0175	WATERFORD RIVER AT BROOKFIELD ROAD	47 31 34	-52 45 48	Provincial	4	Local CESI Station
NF02ZM0176	SOUTH BROOK AT MOUTH	47 31 41	-52 44 48	Provincial	4	Local CESI Station
NF02ZM0177	RENNIE'S RIVER AT PORTUGAL COVE ROAD	47 34 28	-52 42 36	Provincial	4	Local CESI Station
NF02ZM0178	LEARYS BROOK AT PRINCE PHILIP DRIVE	47 34 21	-52 44 21	Fed/Prov	5	RTWQ / Hydrometric / Core CESI Station / CABIN site 11-12
NF02ZM0179	TRIBUTARY TO VIRGINIA RIVER AT GUZZWELL DRIVE	47 35 47	-52 42 06	Provincial	4	Local CESI Station
NF02ZM0180	VIRGINIA RIVER AT NEWFOUNDLAND DRIVE	47 35 59	-52 42 02	Provincial	4	Local CESI Station

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NF02ZM0181	WATERFORD RIVER AT BLACKHEAD ROAD	47 32 53	-52 43 09	Fed/Prov	5	Core CESI Station
NF02ZM0182	WATERFORD RIVER AT BREMIGANS POND DAM	47 31 07	-52 51 21	Provincial	4	Local CESI Station
NF02ZM0183	KELLIGREWS RIVER AT KELLIVIEW CRESCENT	47 29 45	-53 01 03	Provincial	4	Local CESI Station / CABIN site 11-12
NF02ZM0185	SOUTH BROOK AT HEADWATERS	47 29 37	-52 51 02	Provincial	4	CABIN site 08-09 / Comp Guidelines Site / Local CESI Station
NF02ZM0294	MANUELS RIVER ABOVE MANUELS ACCESS ROAD	47 31 11	-52 56 41	Provincial	4	Archaeologically significant / Local CESI Station
NF02ZM0359	PADDYS POND AT OUTLET	47 29 17	-53 47 36	Provincial	4	RTWQ stand-alone station
NF02ZN0004	SALMONIER RIVER AT ST. CATHERINES	47 10 54	-53 23 56	Provincial	4	Local CESI Station

CENTRAL REGION

NF02YM0003	INDIAN BROOK AT ROUTE 390	49 29 53	-56 10 35	Provincial	4	CABIN site 08-09 / Hydrometric / Local CESI Station
NF02YM0004	SOUTH WEST BROOK AT BAIE VERTE	49 55 15	-56 13 45	Provincial	4	Hydrometric / Local CESI Station
NF02YO0001	EXPLOIT'S RIVER AT GRANDFALLS	48 55 27	-55 39 21	Provincial	4	Local CESI Station
NF02YO0121	PETERS RIVER NEAR BOTWOOD	49 06 21	-55 24 38	Provincial	4	Hydrometric /Former RTWQ / Local CESI Station/ CABIN site 12-13
NF02YO0020	EXPLOITS RIVER AT ASPEN BROOK	48 56 55	-55 54 56	Provincial	4	Local CESI Station
NF02YO0107	EXPLOITS RIVER NEAR MILLERTOWN	48 45 34	-56 35 32	Fed/Prov	5	Hydrometric / Core CESI Station
NF02YO0128	EXPLOITS RIVER BELOW GRAND FALLS	48 56 12	-55 37 03	Provincial	4	Local CESI Station
NF02YO0142	CORDUROY BROOK NEAR CENTENNIAL PARK	48 56 21	-55 39 47	Provincial	4	Local CESI Station / CABIN site 11-12
NF02YO0143	EXPLOITS RIVER AT BOND BRIDGE	49 01 15	-55 27 15	Provincial	4	Local CESI Station
NF02YO0189	JOES LAKE AT OUTLET	49 01 43	-56 04 01	Provincial	4	
NF02YQ0006	NORTHWEST GANDER RIVER AT HIGHWAY BRIDGE	48 34 54	-55 30 20	Provincial	4	CABIN site 08-09 / Comp Guidelines Site / Local CESI Station
NF02YQ0030	GANDER RIVER AT APPLETON	48 59 41	-54 52 04	Fed/Prov	8	Hydrometric / Core CESI Station

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NF02YQ0072	CARELESS COVE BROOK AT BEAVERBROOK MINES ROAD	48 54 08	-54 59 38	Fed/Prov	4	CABIN Annual site 10-11/ 11-12 /12-13/ 13-14 & 14-15
NF02YR0001	POUND COVE BROOK AT ROUTE 330	49 11 11	-55 55 24	Provincial	4	Comp Guidelines Site/ CABIN site 12-13 / Local CESI Station
NF02YS0001	TERRA NOVA RIVER AT TERRA NOVA	48 30 27	-54 12 43	Provincial	4	Local CESI Station
NF02YS0011	TERRA NOVA RIVER AT SPENCER BRIDGE	48 38 27	-54 02 11	Fed/Prov	5	Hydrometric / Core CESI Station
NF02YS0083	NORTHWEST RIVER AT TERRA NOVA NATIONAL PARK	48 23 44	-54 11 53	Provincial	4	Hydrometric / National Park / Local CESI Station

WESTERN REGION

NF02YE0004	PORLTAND CREEK AT ROUTE 430	50 10 54	-57 36 13	Provincial	4	Local CESI Station
NF02YE0005	WESTERN BROOK AT ROUTE 430	49 49 49	-57 51 23	Fed/Prov	5	CABIN site 08-09 / Core CESI Station
NF02YG0001	MAIN RIVER AT ROUTE 420	49 46 10	-56 54 15	Fed/Prov	5	Canadian Heritage River /Core CESI Station
NF02YG0009	MAIN RIVER AT PARADISE POOL	49 48 46	-57 09 24	Provincial	4	Former RTWQ / Hydrometric / Canadian Heritage River / Local CESI Station
NF02YG0020	EAGLE MOUNTAIN BROOK BELOW EAGLE MOUNTAIN POND	49 49 53	-57 17 15	Provincial	4	Local CESI Station
NF02YH0018	LOMOND RIVER AT ROUTE 431	49 24 07	-57 43 49	Provincial	4	CABIN site 08-09 / Local CESI Station
NF02YJ0004	PINCHGUT BROOK AT TCH	48 47 51	-58 03 43	Fed/Prov	8	CABIN Annual site 08-09/11-12/12-13/ 13-14 & 14-15 / Core CESI Station
NF02YK0022	HUMBER CANAL AT MAIN DAM ROAD	49 09 58	-57 24 56	Provincial	4	Local CESI Station
NF02YL0011	HUMBER RIVER AT LITTLE FALLS BRIDGE	49 20 54	-57 14 07	Provincial	4	Local CESI Station
NF02YL0012	HUMBER RIVER AT HUMBER VILLAGE BRIDGE	48 59 01	-57 45 40	Fed/Prov	5	RTWQ / Hydrometric / Core CESI Station
NF02YL0013	CORNER BROOK AT MARGARET BOWATER PARK	48 56 40	-57 56 12	Provincial	4	Local CESI Station
NF02YL0029	WILD COVE BROOK AT ROUTE 440	48 58 28	-57 53 02	Provincial	4	Local CESI Station / CABIN site 12-13
NF02YN0001	LLOYDS RIVER AT ROUTE 480	48 18 16	-57 43 07	Fed/Prov	5	CABIN site 09-10 / Core CESI Station

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NF02YN0043	PETER STRIDES LAKE AT ROUTE 480	48 09 13	-57 43 24	Provincial	4	
NF02ZC0020	BUCK LAKE ON ROUTE 480	48 00 48	-57 39 59	Provincial	4	
NF02ZA0006	GRAND CODROY RIVER BELOW OVERFALL BROOK	47 52 08	-59 07 05	Provincial	4	Local CESI Station

Notes:

1. A total of 56 stations (including 12 core CESI stations) will be sampled during 2014-2015 on the island portion of the province.
2. For statistical analysis it is important that at least four samples are collected from each station representing four seasons in a fiscal year.
3. All Core CESI stations being sampled 5 times per year if possible.
4. Selected Core CESI stations being sampled 8 times per year to perform sensitivity analysis on frequency of sampling impact on CESI scores.
5. Total number of samples to be collected from all NL stations is 245, including 69 samples from Core CESI stations (this number does not include triplicate or blank samples)
6. All sampling is carried out by provincial staff.

Table B.2: Northern Index Station Location, Designation and Sampling Frequency 2014-2015 for Labrador Stations. Core CESI stations are shaded gray.

Station #	Description	Latitude	Longitude	Designation	Samples/year	Classification
LABRADOR REGION						
NF02XA0001	LITTLE MECATINA RIVER ABOVE LAC FOURMONT	52 13 42	61 19 32	Provincial	4	Hydrometric / Local CESI Station
NF03NF0013	UGJOKTOK RIVER BELOW HARP LAKE	55 13 60	61 17 57	Fed/Prov	5	Hydrometric / Core CESI Station
NF03OC0012	ATIKONAK RIVER ABOVE PANCHIA LAKE	52 58 03	64 39 40	Fed/Prov	5	Hydrometric / Core CESI Station
NF03OD0011	EAST METCHIN RIVER AT TLH	53 26 07	63 14 03	Provincial	4	Hydrometric / Local CESI Station
NF03OE0001	CHURCHILL RIVER ABOVE UPPER MUSKRAT FALLS	53 14 52	60 47 21	Fed/Prov	4	RTWQ / Hydrometric / Local CESI Station
NF03OE0030	MINIPI RIVER BELOW MINIPI LAKE	52 36 53	61 11 11	Fed/Prov	5	RTWQ / Hydrometric / Core CESI Station
NF03OE0032	PINUS RIVER ABOVE TLH	53 08 52	61 33 31	Provincial	4	Hydrometric / Comp Guidelines Site / Local CESI Station
NF03OE0033	BIG POND BROOK BELOW BIG POND	53 30 43	60 17 31	Provincial	4	Hydrometric / Local CESI Station
NF03PB0025	NASKAUPI RIVER BELOW NASKAUPI LAKE	54 07 54	61 25 45	Fed/Prov	5	Core CESI Station
NF03QC0001	EAGLE RIVER ABOVE FALLS	53 27 54	57 33 29	Fed/Prov	5	Hydrometric / Core CESI Station / Eagle River Plateau Management Zone
NF03QC0002	ALEXIS RIVER NEAR PORT HOPE SIMPSON	52 38 57	56 52 17	Provincial	4	Hydrometric / Local CESI Station
NF03OD0012	WILSON RIVER EAST BRANCH	53 18 33	62 55 11	Provincial	4	Ashkui /CABIN 10-11 / Local CESI Station
NF03OE0035	DOMINION LAKE OUTFLOW	52 43 45	61 45 17	Provincial	4	Ashkui / Local CESI Station
NF03OE0037	CACHE RIVER AT TLH	53 11 33	62 12 11	Provincial	4	Ashkui / Local CESI Station
NF03PB0028	CAPE CARIBOU RIVER AT GRAND LAKE	53 37 16	60 24 52	Provincial	4	Ashkui / Local CESI Station
NF03PB0029	GRAND LAKE OUTFLOW AT NORTH WEST RIVER	53 31 18	60 08 31	Provincial	4	Ashkui
NF03PB0030	SEAL LAKE AT NARROWS	54 19 55	61 38 27	Provincial	4	Ashkui / Former Local CESI Station

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NF03PB0032	SUSAN RIVER NORTH OF BEAVER RIVER	53 44 17	60 56 48	Provincial	4	Ashkui / Local CESI Station
NF03PB0037	WUCHUSK LAKE AT NASKAUPI RIVER INFLOW	54 23 43	61 47 09	Provincial	4	Ashkui
NF03QA0044	CARTER BASIN OUTFLOW	53 29 52	59 52 25	Provincial	4	Ashkui
NF03QA0045	KENAMU RIVER NEAR MOUTH	53 28 34	59 55 01	Provincial	4	Ashkui / Comp Guidelines Site
NF03OA0020	ASHUANIPI RIVER AT FERGUSON BAY	53 0 06	66 14 30	Provincial	4	Local CESI Station

Notes:

1. A total of 22 stations will be sampled during 2014-2015 in Labrador.
2. The Labrador stations are listed as being sampled four times per year; this refers to the number of samples taken; **there must be a minimum of three samples taken each fiscal year** at the Labrador sites. Generally, five trips are made to each station.
3. All five Core CESI stations in Labrador are accessible only by helicopter.
4. Total number of samples to be collected is 93, including 25 samples from Core CESI stations (this number does not include triplicate or blank samples).
5. All Core CESI stations being sampled 5 times per year if possible.
6. Sampling is carried out by provincial and federal staff (i.e. schedule developed by provincial staff at beginning of sampling season and distributed to federal staff to ensure the preferred number of samples are collected at the remote sites during field visits between either of the two agencies).

Table B.3 Analytical Parameters, Holding Times and Schemas for 2014-2015

Parameter	Holding Times (recommended by ALET Lab Services)	Schema Name	Parameter/ Grouping	
		M_pH auto, M_Alkalinity, M_Conductivity	alkalinity, pH, conductivity	
Major Ions		M_Metals_TR ICP-OES	Ca, Mg, Na, and K	
Alkalinity	14 days	M_Anions	NO3 by IC	
Chloride	28 days	included in M_Anions	Cl and SO4 by IC	
Sulphate	28 days	M_TP	total phosphorus	
Calcium	180 days	M_TN	total nitrogen	
Magnesium	180 days	M_DOC	dissolved inorganic and organic carbon	
Sodium	180 days	M_Hardness	Calculation derived from Ca and Mg	
Potassium	180 days	M_Colour	Colour-apparent (unfiltered sample)	
Physical		M_Turbidity	turbidity	
pH	48 hours	TM2004/T27W	Total metals-27 elements (Schema No. 31)	
Conductivity	28 days			
Colour	48 hours*			
Turbidity	48 hours			
Nutrients				
Nitrate	24 hours*			
Total Nitrogen	28 days			
Total Phosphorus	28 days			
DIC/DOC	28 days			
Metals				
Total Metals-27 elements	6 months remains at NLET			

***27 Metals include:**

aluminum	bismuth	iron	nickel	uranium
antimony	cadmium	lanthanum	rubidium	vanadium
arsenic	cobalt	lead	selenium	zinc
barium	copper	lithium	silver	
beryllium	chromium	manganese	strontium	
boron	gallium	molybdenum	thallium	

Analytical service for major ions, physico-chemical, and major ions analyses are transferred from NLET to ALET in 2014-15 due to increased demand for NLET service by other Environment Canada programs. Nevertheless a laboratory comparability study was conducted by Environment Canada and Newfoundland Environment and Conservation to assure data continuity. Metals analyses will remain at NLET.

Table B.4 Ambient Water Quality Monitoring and Data Management Activities 2014-15 (Cost-Shared and Work-Shared)

Management Activities		Leads/Commitments
Water Quality Sampling and Analysis (Cost-shared activity)	<p>Water samples are collected by provincial staff.</p> <ul style="list-style-type: none"> - Field data submitted regularly to EC laboratory <p>Analysis is completed by federal lab to ensure consistency.</p> <ul style="list-style-type: none"> - ISO standards adhered to - Detection limits mutually agreed upon 	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> - NL will collect 338 samples in 2014-2015, including 94 from Core CESI stations (no triplicate or blanks are included in the above noted total) <p><i>Additional lab analyses beyond what is required for core CESI stations are used to partially offset provincial sampling costs associated with sample collection at these sites (e.g. travel costs, field personnel time, etc.)</i></p> <p><u>Environment Canada</u></p> <ul style="list-style-type: none"> - EC will provide the analytical service for all samples (according to Table B.3) by March 31, 2015. - EC analysis is valued at \$39,585. The cost for EC to collect samples from 12 Core CESI sites in NL alone would exceed that amount. - EC will pay \$15,000 to NL for costs associated with sampling remote Labrador CESI stations, which are accessible only by helicopter. <p>\$15,000 payable to NL (included in cost-shared table B5) \$39,585 payable to EC Laboratory Services (For EC Internal Purposes Only)</p>
Data Management (Work-shared activity)	<p>Processing and Loading of WQ analytical data</p> <ul style="list-style-type: none"> - Conducted by Environment Canada <p>Accessibility/Availability of NL WQMA Dataset</p> <ul style="list-style-type: none"> - Maintained by Environment Canada 	<p><u>Environment Canada</u></p> <ul style="list-style-type: none"> - verifies and corrects data - transfers data to database - ensures NL WQMA dataset is available on external server for download - maintains database and data transformation package - ensures filtered copy of database (containing NL WQMA dataset) is available outside the firewall - provides backed up NL WQMA dataset every six months to NL ENVC <p><u>Newfoundland and Labrador Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> - Responsible for reviewing, QA/QC ing and subsequently replacing the former dataset

Data Management Special Projects (Work-shared activity)	Laboratory Comparison Study to verify comparability in analytical results for water quality parameters between NLET and ALET	<p><u>Environment Canada</u></p> <ul style="list-style-type: none">- Final report to be prepared by EC in 2014-2015 <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none">- Input to final report in 2014-2015
	Data Verification and Validation of Sample/Measurement Data	<p><u>Environment Canada</u></p> <ul style="list-style-type: none">- EC will continue to work with NL to exchange information and knowledge relating to the data Verification and Validation tool. <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none">- NL ENVC will continue to assess the Data Verification and Validation tool and adapt as necessary to apply to the NL WQMA dataset in an approach consistent with that used by other projects within EC Database
	Data extraction tools development and updates to CANAL	<p><u>Environment Canada</u></p> <ul style="list-style-type: none">- EC will provide a data extraction tool for the water quality database for use by NL- EC will provide assistance to NL in the use of the tool for data extraction <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none">- NL ENVC will test the tool on their web site for effectiveness when available from EC- NL ENVC will generate and add factsheets for all ambient water monitoring stations to CANAL- NL ENVC will update the WQI section on CANAL annually to reflect current CESI values- NL ENVC will add a CABIN section to CANAL- NL ENVC will regularly update the metadata that populates CANAL

Table B.5 Additional Core Activities 2014-2015 (Cost-Shared)

Project	Activity / In-kind Contributions	Amount Payable to NL Exchequer by Mar 31, 2015
Canadian Aquatic Biomonitoring Network (CABIN)	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> - Monitoring of benthic invertebrates at selected water bodies (reference sites, core CESI sites and annual sites) for maintenance of the long-term reference network in support of the Atlantic Reference Approach Model. - Finalize a Baseline Report on Reference Invertebrate Assemblages in NL - Share spatial data with EC, for use in the reference model <p><u>Environment Canada</u></p> <ul style="list-style-type: none"> - Develop CABIN reference model and associated tools 	<p>\$5,000</p> <p>(matched by NL from annual budget)</p>
Canadian Environmental Sustainability Indicators (CESI)	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> - Compile, analyse and interpret water quality data at Core CESI stations according to CESI protocols. - Produce an overview document, indicating issues driving the ratings and spatial trends. - Produce a final report validating/contributing to CESI core stations review for longer term WQI national reporting. <p><u>Environment Canada</u></p> <ul style="list-style-type: none"> - QA/QC of submitted data/results and report to the public on the web 	<p>\$20,000</p> <p>(matched by NL from annual budget)</p>
Modifications / Improvements to CESI WQI Calculator	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> - Evaluate CESI Calculator and document solutions to issues encountered - Modify the coding of the CESI Calculator to incorporate ammonia (compute) guideline. - Incorporate improvements to the calculator including: redesign interface to reflect the new CCME WQI Calculator (i.e. better conceptual flow for end users). - Make appropriate improvements to the Help Manual 	<p>\$8,000</p> <p>(matched by NL from annual budget)</p>

	<u>Environment Canada and NL Department of Environment and Conservation</u> <ul style="list-style-type: none">- Publication on the development and application of the CESI WQI Calculator (work shared project)- <u>Investigate how Trend Analysis can be incorporated into the CESI Calculator.</u>- <u>EC will host a webinar relating to the CESI Calculator.</u>	
Chemical Management Plan	<u>NL Department of Environment and Conservation</u> <ul style="list-style-type: none">- Monthly water sampling at a select location on the Waterford River.	\$2,500 (matched by NL from annual budget)
Labrador Remote Station Sampling (see Table B4)		\$15,000
	TOTAL:	\$50,500

Therefore Environment Canada will transfer to Newfoundland Exchequer the sum of \$50,500 by March 31, 2015.

Table B.6. Special Projects (Work Shared)

Monitoring Network Evaluation and Optimization (Work-shared activity)	<p>This on-going project focuses on evaluating the network on a regular basis to ensure that the partner's monitoring objectives are being met and that the network will be sustainable in the long-term.</p> <p>This is a multi-year project that will carry over into 2015-2016.</p>	<p>Risk-Based Assessment (station level):</p> <p><u>Environment Canada</u></p> <ul style="list-style-type: none">- EC will provide guidance and advice as required and work with NL ENVC to optimize approach for NL waters <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none">- NL ENVC staff assessed all stations and calculated the associated RBA scores using expert opinion and available scientific data in 2013-2014.- NL ENVC will generate a report documenting the findings in 2014-2015 <p>Risk-Based Assessment (basin level):</p> <p><u>Environment Canada</u></p> <ul style="list-style-type: none">- EC will share the results of the RBBA, including quantitative stressor intensity information and final aggregated stressor index scores per sub drainage area for NL basins- EC will continue work to integrate higher level of information to the RBBA, including aquatic ecosystems/resources components, hydrological considerations, and analysis at finer scale (sub sub drainage area) <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none">- NL ENVC will develop a project plan to determine how the RBBA findings can be incorporated into a GIS-based project specific to NL <p>Power Analysis / Trend Analysis:</p> <p><u>Environment Canada</u></p> <ul style="list-style-type: none">- The evaluation of sampling frequencies for trend detection using power analysis <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none">- NL ENVC will continue to investigate statistical approaches to optimize the monitoring network within the province- NL ENVC will generate a "Trend Analysis" report for NL stations <p>EC and NL ENVC will collaboratively review all results</p>
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Intensive Survey (Work-shared activity)	Completion of joint 2009-10 Intensive Survey report	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none">- NL ENVC will prepare a final report and submit to EC for review- NL ENVC will post completed report on Divisional web page <p><u>Environment Canada</u></p> <ul style="list-style-type: none">- EC will provide final comments and input to the report
Site-specific Guidelines Project (Work-shared activity)	Development of site-specific guidelines for select NL water bodies in partnership with industry	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none">- Development of site-specific guidelines for select parameters at select NL water bodies in partnership with industry where deemed appropriate <p><u>Environment Canada</u></p> <ul style="list-style-type: none">- EC will provide technical advice and review as needed
Real-time Instrumentation Special Projects (Work-shared activity)	<p>In-situ water quality/quantity/climate monitoring using a mobile environmental monitoring platform (MEMP) on a need-basis across the province</p> <p>Sharing of instrumentation purchase, deployment and maintenance expenses for real-time monitoring stations of joint interest</p>	<p><u>Environment Canada</u></p> <ul style="list-style-type: none">- EC will continue to loan the MEMP to NL ENVC- EC will purchase new sonde to replace current unit at Waterford R (as approved in the EC Capital Plan)- EC and NL ENVC will continue to work together to share expertise on various new technologies <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none">- NL ENVC will provide in-kind contribution for regular servicing and performance checks on shared instruments at core CESI and CMP sites- NL ENVC continues to set up and deploy water quality equipment throughout the province- Upgrades and improvements (i.e. addition of web camera) are planned for fiscal year 2014-2015- NL ENVC will continue to dedicate one staff (Ryan Pugh) as the custodian of the MEMP- NL ENVC will continue to share testing results of new technologies with EC

Extrapolation of non-measured data at select real-time stations (Work-shared activity)	Development of regression models to extrapolate water quality parameters from real-time measurements of related parameters. Results may be applicable to the national program, reducing sampling and analytical costs at some stations.	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none">- Regression models to compare (1) total suspended solids (TSS) concentration vs. real-time turbidity measurements and (2) ion concentration vs. real-time specific conductivity measurements- Grab sample data is being collected to validate the models- Publication of studies <p><u>Environment Canada</u></p> <ul style="list-style-type: none">- EC will continue to provide technical advice and review on the approach considering its national applicability
Development of Real-time water Quality Monitoring QA/QC products (Work-shared activity)	Development of Protocol Manuals for real-time and automated water quality monitoring activities.	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none">- Development of two program manuals entitled:1) Protocols Manual for Real-Time Water Quality Monitoring in NL2) Protocols Manual for Real-Time Water Quality Monitoring in NL – Calibration and Maintenance Guide for Industry Partners- To be posted on the departmental web page and shared with the Automated FWQMS Task Group <p><u>Environment Canada</u></p> <ul style="list-style-type: none">- EC will continue to provide technical advice and review on the manuals considering its national applicability; may adapt manuals to reflect national program- EC will continue to share products and information developed by, and associated with the Automated Fresh Water Quality Monitoring and Surveillance Task Group

Appendix A

Figure A-1 – Water Quality Sampling Sites 2014-2015 – Newfoundland

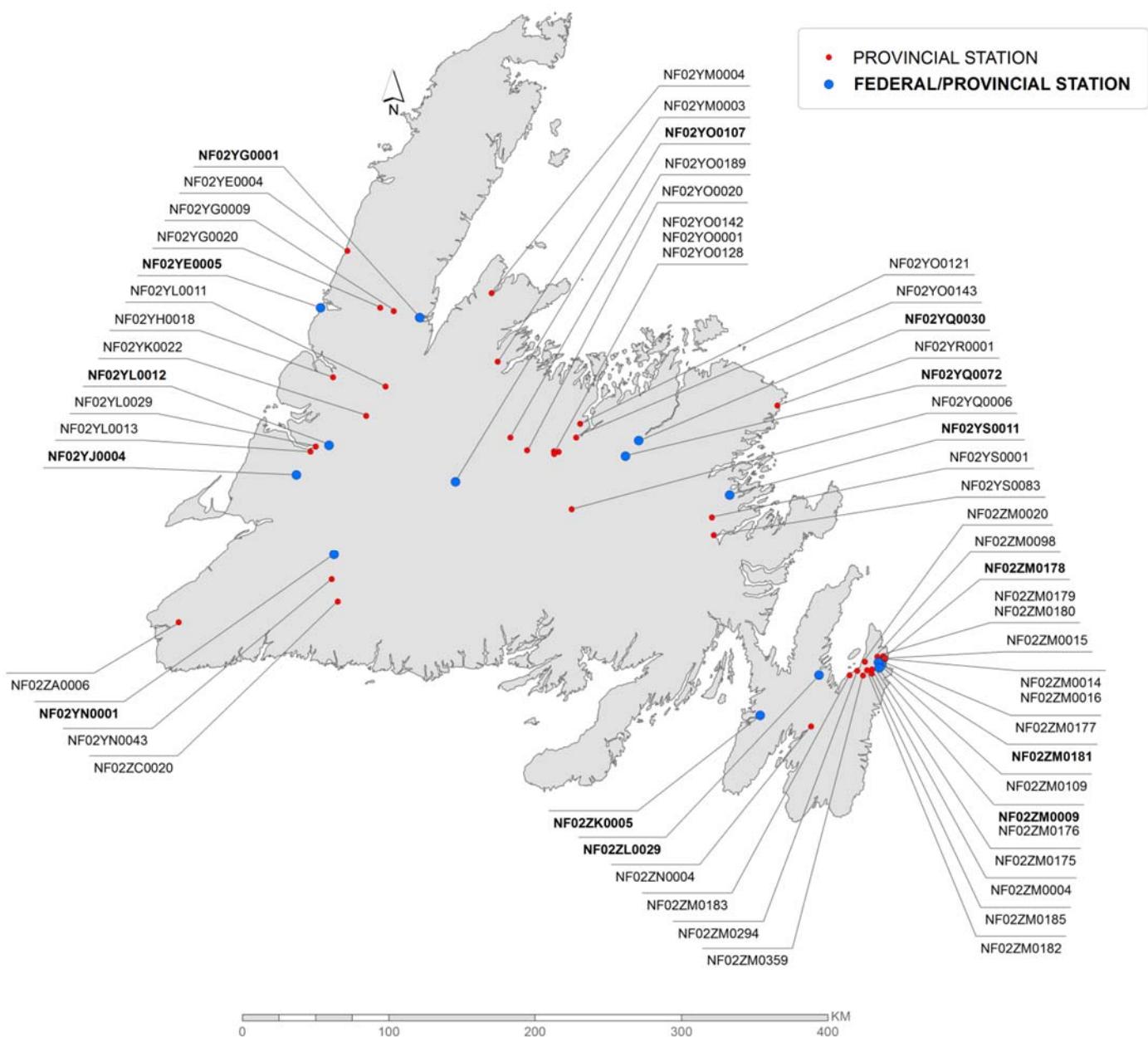


Figure A-2 – Water Quality Sampling Sites 2014-2015 – Labrador

