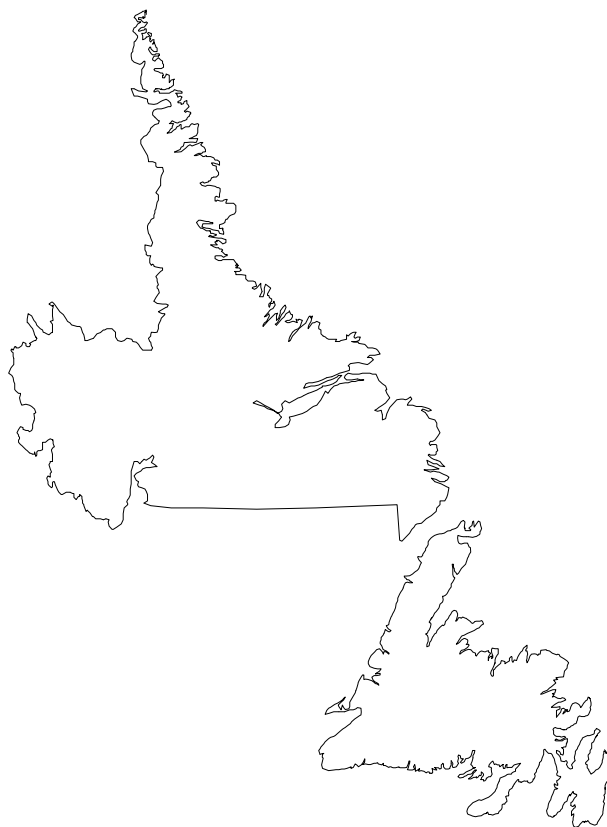


CANADA-NEWFOUNDLAND and LABRADOR WATER QUALITY MONITORING AGREEMENT

Progress Report 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

Introduction

The following progress report was prepared by NL ENVC staff to document progress made on all activities under the *Canada-Newfoundland and Labrador Water Quality Monitoring Agreement* during 2014-2015. This document is formatted to reflect the same layout as the 2014-2015 Annual Work Schedule. Additionally, a table has been added to include activities completed solely by WRMD staff.



Work Shared Activities for Fiscal Year 2014-2015

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

Ambient Water Quality Sampling

During 2014-2015, the ambient water quality grab sampling proceeded as outlined in the corresponding Annual Work Schedule. A comparison of the number of samples scheduled vs. the number of samples collected can be seen in **Table 1** and **Table 2**. In the majority of cases, the number of samples actually collected reflected the number of samples scheduled. In some instances, due to scheduling conflicts, human resource limitations and adverse weather conditions some samples were missed.

In the upcoming fiscal year, NL ENVC staff will aim to ensure that the number of samples collected reflect the number of samples scheduled as outlined in the Annual Work Schedule 2015-2016.

Table 1: Provincial Samples Collected in 2014-2015 Fiscal Year in Newfoundland (Island Portion of the Province)

Station #	Description	Number of Samples Scheduled in 14-15	Number of Samples Collected in 14-15
<u>EASTERN REGION</u>			
NF02ZK0005	Northeast River near Placentia	8	8
NF02ZL0029	Goulds Brook near Makinsons	5	6
NF02ZM0004	Waterford River at Commonwealth Avenue	4	4
NF02ZM0009	Waterford River at Kilbride	4	4
NF02ZM0014	Virginia River at the Boulevard	4	4
NF02ZM0015	Quidi Vidi at Outlet	4	4
NF02ZM0016	Rennie's River at Carnell Drive	4	4
NF02ZM0020	Broad Cove Brook near St. Phillips	4	4
NF02ZM0098	Virginia River at headwaters	4	4
NF02ZM0109	Mundy Pond at Outlet	4	4
NF02ZM0175	Waterford River at Brookfield Rd.	4	4
NF02ZM0176	South Brook at Mouth	4	4
NF02ZM0177	Rennie's River at Portugal Cove Road	4	4
NF02ZM0178	Learys Brook at Prince Phillip Drive	5	5
NF02ZM0179	Tributary to Virginia River at Guzwell Drive	4	4

Station #	Description	Number of Samples Scheduled in 14-15	Number of Samples Collected in 14-15
NF02ZM0180	Virginia River at Newfoundland Drive	4	4
NF02ZM0181	Waterford River at Blackhead Road	5	5
NF02ZM0182	Waterford River at Bremigans Pond Dam	4	4
NF02ZM0183	Kelligrews River at Kelliview Crescent	4	4
NF02ZM0185	South Brook at Headwaters	4	4
NF02ZN0004	Salmonier River at St. Catherines	4	4
NF02ZM0294	Manuels River above Manuels Access Road	4	4
NF02ZM0359	Paddy's Pond at Outlet	4	3
<u>CENTRAL REGION</u>			
NF02YM0004	South West Brook at Baie Verte	4	4
NF02YM0003	Indian Brook at Route 390	4	4
NF02YO0189	Joe's Lake at Outlet	4	4
NF02YO0107	Exploits River at Millertown	5	5
NF02YO0020	Exploits River at Aspen Brook	4	3
NF02YO0001	Exploits River at Grand Falls	4	3
NF02YO0128	Exploits River below Grand Falls	4	4
NF02YO0142	Corduroy Brook near Centennial Park	4	4
NF02YO0143	Exploits River at Bond Bridge	4	3
NF02YR0001	Pound Cove Brook at Route 330	4	4
NF02YO0121	Peter's River near Botwood	4	4
NF02YQ0006	Northwest Gander River at Highway Bridge	4	3
NF02YQ0030	Gander River at Appleton	8	8
NF02YQ0072	Careless Brook at Resource Road Steel Bridge	3	3
NF02YS0001	Terra Nova River at Terra Nova	4	4

Station #	Description	Number of Samples Scheduled in 14-15	Number of Samples Collected in 14-15
NF02YS0011	Terra Nova River at Spencer Bridge	5	5
NF02YS0083	Northwest River at Terra Nova National Park	4	4
<u>WESTERN REGION</u>			
NF02YE0004	Portland Creek at Route 430	4	4
NF02YE0005	Western Brook at Route 430	5	5
NF02YG0001	Main River at Route 420	5	5
NF02YG0009	Main River at Paradise Pool	4	1
NF02YG0020	Eagle Mountain Brook below Eagle Mountain Pond	4	1
NF02YH0018	Lomond River at Route 431	4	4
NF02YJ0004	Pinchgut Brook at TCH	8	7
NF02YK0022	Humber Canal at Main Dam Road	4	3
NF02YL0011	Humber River at Little Falls Bridge	4	3
NF02YL0012	Humber River at Humber Village Bridge	5	4
NF02YL0013	Corner Brook at Margaret Bowater Park	4	3
NF02YL0029	Wild Cove Brook at Route 440	4	3
NF02YN0001	Lloyds River at Route 480	5	5
NF02ZA0006	Grand Codroy River below Overfall Brook	4	3
NF02ZC0020	Buck Lake on Route 480	4	2
NF02YN0043	Peter Stride's Lake at Route 780	4	3

Notes:

1. Total number of samples collected in 2014-15 does include triplicate samples. The total does not include bottle blanks.
2. Total number of samples planned for 2014-15 for Eastern region was 99; 99 were sampled plus 8 triplicates and 8 trip blanks.
3. Total number of samples planned for 2014-15 for Central region was 73; 69 were sampled plus 7 triplicates and 14 trip blanks.
4. Total number of samples planned for 2014-15 for Western region was 72; 56 were sampled plus 3 triplicates and 4 trip blanks.

Table 2: Northern Samples Collected in 2014-2015 Fiscal Year in Labrador

Station #	Description	Number of Samples Scheduled in 14-15	Number of Samples Collected in 14-15
<u>LABRADOR REGION</u>			
NF02XA0001	Little Mecatina River above Lac Fourmont	4	5
NF03NF0013	Ugjoktok River below Harp Lake	5	5
NF03OC0012	Atikonak River above Panchia Lake	5	4
NF03OD0011	East Metchin River at TLH	4	5
NF03OE0001	Churchill River Above Upper Muskrat Falls	4	6
NF03OE0030	Minipi River below Minipi Lake	5	5
NF03OE0032	Pinus River above TLH	4	5
NF03OE0033	Big Pond Brook below Big Pond	4	5
NF03PB0025	Naskaupi River below Naskaupi Lake	5	4
NF03QC0001	Eagle River above Falls	5	4
NF03QC0002	Alexis River near Port Hope Simpson	4	4
NF03OD0012	Wilson River East Branch	4	5
NF03OE0035	Dominion Lake Outflow	4	6
NF03OE0037	Cache River at TLH	4	4
NF03PB0028	Cape Caribou River at Grand Lake	4	4
NF03PB0029	Grand Lake Outflow at North West River	4	4
NF03PB0030	Seal Lake at Narrows	4	3
NF03PB0032	Susan River North of Beaver River	4	4
NF03PB0037	Wuchusk Lake at Naskaupi River Inflow	4	3
NF03QA0044	Carter Basin Outflow	4	5
NF03QA0045	Kenamu River near Mouth	4	5
NF03OA0020	Ashuanipi River at Ferguson Bay	4	5

Notes:

1. Total number of samples collected in 2014-15 does include triplicate samples. The total does not include bottle blanks.
2. Total number of samples planned for 2014-15 for Labrador region was 93; 100 were sampled plus 8 triplicates and 4 blanks.

Ambient Water Quality Analysis

During 2014-2015, Analytical service for major ions, physic-chemical, and major ions analyses were transferred from NLET to ALET due to increased demand for NLET service by other Environment Canada programs. A laboratory comparability study was conducted by Environment Canada and Newfoundland and Labrador's Department of Environment and Conservation to assure data continuity. Metals analyses will remain at NLET. There were no lab issues/delays encountered. All shipping/analysis were carried out as agreed upon in the Annual Work Schedule 2014-2015 as seen in **Table 3**.

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

Schema Name	Parameter	Holding Times (recommended by ALET)
MAJOR IONS		
M_Alkalinity	Alkalinity	14 days
M_Anions	Chloride	28 days
	Sulphate	28 days
M_Metals_TR ICO-OES	Calcium	180 days
	Magnesium	180 days
	Sodium	180 days
	Potassium	180 days
PHYSICAL		
M_pH auto	pH	24 hours
M_Conductivity	Conductivity	28 days
M_Colour	Colourv - apparent	48 hours*
M_Turbidity	Turbidity	48 hours
NUTRIENTS		
M-Anions	Nitrate	24 hours*
M_TN	Total Nitrogen	28 days
M_TP	Total Phosphorus	28 days
M_DOC	DOC	28 days
METALS		
TM2004/T27W	Total Metals-27 elements*	6 months (analyzed 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	

Ambient Water Quality Monitoring and Data Management/Reporting

During 2014-2015, significant effort from both EC and NL ENVC was put into ensuring the Agreement data was accessible in a timely manner to any potential end-users of this water quality information. Numerous products were developed to help make the water quality information more user-friendly. Status of each task can be seen in **Table 4 & 5**.

Table 4: Ambient Water Quality Monitoring and Data Management Activities (Cost-Shared and Work-Shared)

Management Activities		Lead Agency	Progress Evaluation
Water Quality Sampling and Analysis	Collection of water samples under WQMA program and field data submission to laboratory	Newfoundland and Labrador Department of Environment and Conservation	See Table 1 and 2 for list of samples scheduled and collected.
	Laboratory Analysis and Quality Control Processes	Environment Canada	Laboratory Comparability Study was completed for NLET and ALET in May 2014. Results indicated that metals analyses should remain at NLET and other WQ analyses could be moved to ALET without impact on data continuity.
Data Management	Processing and Loading of WQ analytical data	Environment Canada	This has been completed and up to date for 2014-2015.
	Accessibility/Availability of NL WQMA Dataset	Environment Canada	NL Dataset was provided to NL ENVC in September 2014 and March 2015.
Data Management Special Projects	Laboratory Comparison Study	Environment Canada <hr/> Newfoundland and Labrador Department of Environment and Conservation	A report was completed in May 2014.
	Data Verification and Validation of Sample/Masurement Data	Environment Canada <hr/>	NL ENVC continued to assess the potential to adapt/integrate EC's EVAL tool.

		Newfoundland and Labrador Department of Environment and Conservation	
	Data extraction tools development and updates	Environment Canada <hr/> Newfoundland and Labrador Department of Environment and Conservation	EC working on a new tool (similar to the tool used by Pacific-Yukon region) to replace the Atlantic extraction tool. Select data was accessible through the web mapping application, GENIE.

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

Project	Activity	Responsible Agency	Progress Evaluation
Canadian Aquatic Biomonitoring Network (CABIN)	Monitoring of benthic invertebrates at selected waster 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	Newfoundland and Labrador Department of Environment and Conservation	Four CABIN sites were sampled in 2014, including the 3 annual sites and one site on the Waterford River was sampled in partnership with Northeast Avalon ACAP.
	Baseline Report on Reference Invertebrate Assemblages in NL	Newfoundland and Labrador Department of Environment and Conservation	This has been deferred until fiscal year 2015-2016.
	Share spatial data with EC, for use in the reference model	Newfoundland and Labrador Department of Environment and Conservation	This task is ongoing as new data becomes available each year.
	Develop CABIN reference model and associated tools	Environment Canada	Continued calibration and testing of Atlantic Canada model by EC, WRMD and partners.
Canadian Environmental Sustainability Indicators (CESI)	Compile, analyse and interpret water quality data at core CESI stations according to CESI protocols	Newfoundland and Labrador Department of Environment and Conservation	This has been completed and up to date for 2014-2015.
	Produce an overview document indicating issues driving the ratings and spatial trends.	Newfoundland and Labrador Department of Environment and Conservation	Drivers of WQI scores and rankings updated every year to CANAL WQI Comments section.
	Final report validating/contributing to	Newfoundland and Labrador Department	This was completed for 2014-2015.

	CESI core stations review for longer term WQI national reporting	of Environment and Conservation	
	QA/QC of submitted data/results and report to the public on the web page	Environment Canada	This has been completed and up to date for 2014-2015.
Modifications/Improvements to CESI WQI Calculator	Evaluate CESI Calculator and document solutions to issues encountered	Newfoundland and Labrador Department of Environment and Conservation	Updates to CESI WQI calculator were documented in the ongoing Excel spreadsheet maintained and updated by WRMD. EC is updated and made aware of the changes.
	Modify the coding of the CESI Calculator to incorporate ammonia (compute) guideline.	Newfoundland and Labrador Department of Environment and Conservation	Ammonia and confidence interval issues were fixed in May 2014.
	Incorporate improvements to the Calculator including: redesign interface to reflect the new CCME WQI Calculator (i.e. better conceptual flow for end users).	Newfoundland and Labrador Department of Environment and Conservation	Worked on CESI to CCME look alike conversion.
	Make appropriate improvements to the help manual	Newfoundland and Labrador Department of Environment and Conservation	All design and functionality changes have been reflected in the updated Help Manual for the CESI Calculator. The Help Manual has been added as a part of the new installation package for the CESI Calculator and forwarded to EC along with the setup components for the 2014-2015 fiscal year.
	Publication on the development and application of the CESI WQI Calculator	Environment Canada <hr/> Newfoundland and Labrador Department of Environment and Conservation	CESI_WQI paper, prepared for publication was sent by WRMD to EC in February 2015.

	Investigate how trend analysis can be incorporated into the CESI Calculator	Environment Canada _____ Newfoundland and Labrador Department of Environment and Conservation	Ongoing for 2014-2015.
	Host webinar relating to CESI Calculator	Environment Canada	This was not conducted but planned for 2015-16.
Chemical Management Plan	Monthly water sampling at a select station on the Waterford River	Newfoundland and Labrador Department of Environment and Conservation	A CMP water sample was collected monthly for Triclosan and Bisphenyl-A (BPA), and quarterly for Perfluorooctane Sulphonate (PFOS) from Waterford River from April 1, 2014 to March 31, 2015.
Labrador Remote Station Sampling	Labrador water samples are collected by both federal and provincial staff in support of CESI reporting (for more remote core sites).	Environment Canada _____ Newfoundland and Labrador Department of Environment and Conservation	Northern sampling and analysis proceeded as outlined in the Annual Work Schedule 2014-2015. See Table 2.

Table 6: Special Projects (Work Shared)

Project	Activity	Responsible Agency	Progress Evaluation
Monitoring Network Evaluation and Optimization	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.	Environment Canada _____ Newfoundland and Labrador Department of Environment and Conservation	Compiled RBA station list for WQMA and CABIN. Using site doc information all these stations were ranked by individual samplers and scored. These scores were then updated into the RBA database and sent to ECCC.
Intensive	Completion of Intensive	Environment Canada	This report was finalized and posted to the webpage in 2014-2015.

Survey Technical Report	Survey 2009-10 Report (Bonne Bay Ponds)	_____ Newfoundland and Labrador Department of Environment and Conservation	
Site-specific Guidelines Project	Development of site-specific guidelines for select NL water bodies in partnership with industry	Environment Canada _____ Newfoundland and Labrador Department of Environment and Conservation	This activity has been reviewed and will only be pursued if the need for site specific guidelines is identified by an industry partner.
Real-time/Web camera Technology Special Projects	In-site water quality/quantity/climate monitoring using a mobile environmental monitoring platform (MEMP) on a need-basis across the province	Environment Canada _____ Newfoundland and Labrador Department of Environment and Conservation	Web Camera and High-Speed Ethernet network in the MEMP to allow for delivery of Real-Time imagery and faster downloading of data was completed in 2014-15. The MEMP was deployed briefly at Great Pond (Torbay) in Fall 2014 until it was vandalized. The MEMP caught on fire and was destroyed.
	Sharing of instrumentation purchase and maintenance expenses for real-time monitoring stations of joint interest	Environment Canada _____ Newfoundland and Labrador Department of Environment and Conservation	Continuous water quality instrumentation belonging to EC, being used at select NL real time stations, was evaluated, assessed and repaired as necessary by NL ENVC Staff.
Extrapolation of non-measured data at select real-time stations	Development of regression models to extrapolate water quality parameters from real-time measurements of related parameters.	Environment Canada _____ Newfoundland and Labrador Department of Environment and Conservation	Compiled real time and grab sample data for four stations: Leary's Brook, Waterford at Kilbride, Humber River and Rattling Brook Below Bridge. Data was compiled for real time specific conductance and grab sample sodium, calcium, chloride and sulphate for the 2005-2011 period. Flow data were also collected to compare any correlation with quality data. Real time regression model was developed and submitted to iMFE Conference. Similar work was performed for turbidity vs TSS for the same stations.
Development of Real-time	Development of Protocol Manuals for real-time and	Environment Canada	Two separate manuals are being completed;

<p>Water Quality Monitoring QA/QC products</p>	<p>automated water quality monitoring activities.</p>	<p>_____ Newfoundland and Labrador Department of Environment and Conservation</p>	<p>1.) Protocols Manual for Real-Time Water Quality Monitoring in NL 2.) Protocols Manual for Real-Time Water Quality Monitoring in NL – Calibration and Maintenance Guide for Industry Partners</p> <p>In 2014-2015, comments from NL ENVC staff continued to be incorporated into the Protocols Manual for Real-Time Water Quality Monitoring in NL this manual is about 90% completed. Final review/editing needed before posting to webpage.</p> <p>In 2014-2015, the Protocols Manual for Real-Time Water Quality Monitoring in NL – Calibration and Maintenance Guide for Industry Partners, was updated and used for an in house industry partner training workshop. This manual is about 90 % completed. Final review/editing needed before posting to the webpage.</p>
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In fiscal year 2014-2015, select WRMD staff attended and presented at many conferences and training initiatives. They are as follow:

- YSI EXO 2 Training
- St John Ambulance First Aid
- Snowmobile Safety
- Clean and Safe Drinking Water Workshop
- IMFE 2014 – August 2014
- CABIN Workshop – December 2014
- CESI Workshop – December 2014
- PTE Hydrolab Training – March 2015
- Advanced Datalogger Course – January 2015
- NATO Project – January 2015
- Hydrolab Repair – February 2015

Table 7: Industry Monthly and Annual Real-Time Water Quality Reports Completed for 2014-2015

Partners	Monthly Deployment Reports	Annual Deployment Reports
Vale (Voisey's Bay)	Jun 2014 – Jul 2014 Jul 2014 – Aug 2014 Aug 2014 – Sep 2014 Sep 2014 – Nov 2014 *Removed Winter Months	Jun 2014 – Nov 2014
Vale (Long Harbor)	Mar 2014 – Apr 2014 Apr 2014 – May 2014 May 2014 – Jul 2014 Jul 2014 – Aug 2014 Aug 2014 – Sep 2014 Sep 2014 – Oct 2014 Oct 2014 – Nov 2014 Nov 2014 – Dec 2014 Dec 2014 – Feb 2015 Feb 2015 – Mar 2015	Jan 2014 – Dec 2014
Duck Pond Operations (TECK)	Jan 2014 – May 2014 May 2014 – Jun 2014 Jun 2014 – Jul 2014 Jul 2014 – Aug 2014 Aug 2014 – Sept 2014 Sep 2014 – Nov 2014 Nov 2014 – Dec 2014 Jan 2015 – May 2015	Jan 2014 – Dec 2014
Tacora Resources (formally Wabush Mines)	Jun 2014 – Jul 2014 Jul 2014 – Aug 2014 Aug 2014 – Sep 2014 Sep 2014 – Oct 2014 *Removed Winter Months	Jun 2014 – Oct 2014
IOC	Jun 2014 – Jul 2014 Jul 2014 – Aug 2014 Aug 2014 – Sep 2014 Sep 2014 – Oct 2014 *Removed Winter Months	Jun 2014 – Oct 2014
Tata Steel Minerals Canada Limited (TSMC)	Jun 2014 – Jul 2014 Jul 2014 – Aug 2014 Aug 2014 – Sep 2014 Sep 2014 – Oct 2014 *Removed Winter Months	Jun 2014 – Oct 2014
Nalcor	May 2014 – Jun 2014 Jun 2014 – Jul 2014 Jul 2014 – Aug 2014 Aug 2014 – Oct 2014 Oct 2014 – Nov 2014 *Removed Winter Months	May 2014 – Nov 2014
Labrador Iron Mines	Jun 2014 – Jul 2014 Jul 2014 – Aug 2014 Aug 2014 – Sep 2014 Sep 2014 – Oct 2014 *Removed Winter Months	Jun 2014 – Oct 2014

City of St. John's	Feb 2014 – Apr 2014	Jan 2014 – Dec 2014
	Apr 2014 – May 2014	
	May 2014 – Jun 2014	
	Jun 2014 – Aug 2014	
	Aug 2014 – Sep 2014	
	Sep 2014 – Nov 2014	
	Nov 2014 – Dec 2014	
	Dec 2014 – Jan 2015	
	Jan 2015 – Mar 2015	
	Mar 2015 – Apr 2015	

Table 8: WRMD Monthly Real-Time Water Quality Reports Completed for 2014-2015

WRMD Network	Monthly Deployment Reports
Leary's Brook at Prince Philip Drive	Mar 2014 – May 2014 May 2014 – Jun 2014 Jun 2014 – Aug 2014 Aug 2014 – Sep 2014 Sep 2014 – Oct 2014 Oct 2014 – Nov 2014 Nov 2014 – Jan 2015
Humber River at Humber Village Bridge	Apr 2014 – Jul 2014 Oct 2014 – Dec, 2014 Dec 2014 – Mar 2015
Paddys Pond	Jun 2014 – Jul 2014 Jul 2014 – Aug 2014 Aug 2014 – Sep 2014 Sep 2014 – Oct 2014 Oct 2014 – Nov 2014 Nov 2014 – Dec 2014 Dec 2014 – Jun 2015
Minipi River	May 2014 – Jun 2014 Jun 2014 – Jul 2014 Jul 2014 – Aug 2014 Aug 2014 – Sep 2014 *Station discontinued as a real-time station.
Waterford River at Kilbride	Jan 2014 – Apr 2014 Apr 2014 – Jun 2014 Jun 2014 – Aug 2014 Aug 2014 – Sept 2014 Sept 2014 – Oct 2014 Oct 2014 – Nov 2014 Nov 2014 – Jan 2015 Jan 2015 – Apr 2015

Conclusion

A significant amount of work took place under the *Canada-Newfoundland and Labrador Water Quality Monitoring Agreement* for fiscal year 2014-2015. The number of available products from this program continues to grow annually. Activities for 2015-2016 will be clearly outlined in the upcoming Annual Work Schedule and Divisional Work Plan.

NL ENVC would like to take this opportunity to thank our federal counterparts (EC Atlantic Region) for their on-going support and commitment in ensuring the delivery of the outcomes/products under the *Canada-Newfoundland and Labrador Water Quality Monitoring Agreement*.



Appendix A
Additional WRMD Activities 2014-2015

Project	Activity	Responsible Agency	Progress Evaluation
CANAL/Site Documentation Database/Bacteriological Database	Updating of the Site Documentation Database	Newfoundland and Labrador Department of Environment and Conservation	Updates to the Site Documentation Database are completed as needed. An upload of the updates to the database will be done yearly.
	Calculation of the Water Quality Index scores	Newfoundland and Labrador Department of Environment and Conservation	2014 reporting was completed on 2010-2012 data, with updated scores added to CANAL along with relevant interpretation comments.
	Completion of Fact Sheets for selected WQMA stations	Newfoundland and Labrador Department of Environment and Conservation	Draft fact sheets were developed but it was decided it was duplication of information. CANAL is used for all metadata on stations.
Ambient Monitoring Activities	Blue-Green Algae Monitoring	Newfoundland and Labrador Department of Environment and Conservation	Data is collected each summer on a “needs basis”, basically in response to public requests. Monitoring was conducted at Millers Pond (PCSP), Great Pond (Torbay), Paddy’s Pond, Worsley Park (CBS) in 2014. A BGA report will be prepared in 2015 which will include all years of data.
Technical Documents (WQMA)	Updating of Water Quality Monitoring Agreement Web Site	Newfoundland and Labrador Department of Environment and Conservation	This web site has been updated. It will continue to be updated as needed.
	Updating of Contour Maps	Newfoundland and Labrador Department of Environment and Conservation	This project is currently awaiting the completion of the trend analysis report.
Real-Time Related Projects	Audit real-time stations visits/meet with clients	Newfoundland and Labrador Department of Environment and Conservation	Numerous meetings were held between WRMD and select industry clients as follows: - Nalcor Energy (April 2014; June 2014; July 2014; October 2014; January 2015); Alderon - proposed Kami

			project (July 2014; December 2014); TATA Steel Minerals Canada (October 2014; March 2015); Labrador Iron Mines (May 2014); Century Iron Mines Corp – proposed Joyce Lake Project (November 2014);Vale-Long Harbour Project (April 2014; quarterly Community Liaison Committee meetings). Additional conference calls and email correspondence aided in open communication between WRMD and industry clients throughout 2014-2015.
	Audit real-time stations visits/meet with clients	Newfoundland and Labrador Department of Environment and Conservation	Numerous meetings were held between WRMD and select industry clients as follows: - Nalcor Energy (April 2014; June 2014; July 2014; October 2014; January 2015); Alderon - proposed Kami project (July 2014; December 2014); TATA Steel Minerals Canada (October 2014; March 2015); Labrador Iron Mines (May 2014); Century Iron Mines Corp – proposed Joyce Lake Project (November 2014);Vale-Long Harbour Project (April 2014; quarterly Community Liaison Committee meetings). Additional conference calls and email correspondence aided in open communication between WRMD and industry clients throughout 2014-2015.
	Negotiating/renewals of Memorandum of Agreements with industry – New MOAs and Renewals	Newfoundland and Labrador Department of Environment and Conservation	<ul style="list-style-type: none"> - Alderon signed a MOA to establish a real-time water quality/quantity network for the KAMI project in May 2014; this project has since been put on hold. - Churchill Falls (Labrador) Corporation Limited (CFLCo) signed an extension of the MOA in September 2014. - Labrador Iron Mines signed an amendment

			<p>of the MOA to remove one quality/quantity station in October 2014.</p> <ul style="list-style-type: none"> - Nalcor Energy signed an amendment in December 2014 to remove/add real-time water quality stations. - Tata Steel Minerals Canada signed an amendment of the MOA to add one real-time water quality/quantity station in February 2015. - TECK (Duck Pond Operations) signed an extension of the MOA in March 2015. - The City of St. John's did not renegotiate the MOA when it expired on March 31st, 2015.
	Research and Development of New Technologies	Newfoundland and Labrador Department of Environment and Conservation	This was year 1 of a 2 year comparison study of three multiparameter instruments was conducted at Paddy's Pond station and a report produced: YSI 6600V2, YSI Exo2 & Hydrolab HL4.
	Categorization of Turbidity Alerts	Newfoundland and Labrador Department of Environment and Conservation	The turbidity-TSS model for Long Harbour stations were updated. The model allowed identification of the alert level for turbidity. Categorization values were established and an automated email in the event of high turbidity with the severity of the category increasing by the number was set up.
	Implementation of Email Alert System throughout RT Network	Newfoundland and Labrador Department of Environment and Conservation	Email alerts come in for various stations for parameters such as turbidity, dissolved oxygen and specific conductivity
	LCD Screen Display	Newfoundland and Labrador Department of Environment and Conservation	This project has not yet been completed. Will continue in fiscal year 2014-2015.
	Monthly Update of Temperature Probes	Newfoundland and Labrador Department of Environment and Conservation	This has been changed to quarterly update of temperature probes, which is on-going.

	Real-time Instrumentation in-house Testing and Servicing	Newfoundland and Labrador Department of Environment and Conservation	This program is on-going annually with revolving windows of equipment servicing by region. In the winter, PTE's are performed on Labrador Hydrolabs, followed by Central and Western Hydrolabs in the spring. Eastern Hydrolabs are evaluated throughout the summer and fall as required.
	Updating/Populating of Inventory, Calibration and Evaluation Database (ICED)	Newfoundland and Labrador Department of Environment and Conservation	Staff regularly update the ICED database with inventory, calibration and PTE information.
	Annual report on PTEs/repairs to instrumentation	Newfoundland and Labrador Department of Environment and Conservation	All PTEs/repairs information is digitally available in the Inventory, Calibration and Evaluation Database (ICED).
	Cost benefit analysis of in-house testing and servicing	Newfoundland and Labrador Department of Environment and Conservation	Based on the cost-benefit analysis, conducting PTEs and repairs in-house on 41 instruments saved \$9,963 in 2014-2015.
	Coordination/planning of 2015 Real-Time Water Quality Monitoring workshop	Newfoundland and Labrador Department of Environment and Conservation	Funding not available for the 2015 Real-Time Water Quality Monitoring Workshop in fiscal year 2014-2015. Innovative forms of webinars/seminars are being investigated.
Technical Documents (RTWQ)	Real-Time Water Quality Deployment and Annual Reports	Newfoundland and Labrador Department of Environment and Conservation	Please refer to Table 7 & 8.
	Report on International Status of Real-time Monitoring Programs	Newfoundland and Labrador Department of Environment and Conservation	This report has not been completed. Will continue in fiscal year 2015-2016.

	10 year RTWQ report for Vale, Newfoundland and Labrador – Voisey’s Bay	Newfoundland and Labrador Department of Environment and Conservation	Preliminary analysis of RT data collected 2003-2013 from the Voisey’s Bay monitoring network was completed in 2014-2015. It is anticipated the final analysis and report will be completed in 2015-2016.
Technical Documents (WQMA)	Updating of Water Quality Monitoring Agreement Web Site	Newfoundland and Labrador Department of Environment and Conservation	This web site has been updated. It will continue to be updated as needed.
	Updating of Contour Maps	Newfoundland and Labrador Department of Environment and Conservation	This project is currently awaiting the completion of the trend analysis report.
Application of Earth Observation for Water Quality Monitoring	Monitor Changes in Turbidity and TSS along the Churchill River	Newfoundland and Labrador Department of Environment and Conservation	Ongoing literature review to determine applicability.
Automatic Data Retrieval System (ADRS)	On-going Real-time Service Delivery (ADRS – reporting)	Newfoundland and Labrador Department of Environment and Conservation	This task was an on-going activity throughout 2014-2015. This activity will continue in fiscal year 2015-2016.
	Upgrades/Maintenance to ADRS as needed	Newfoundland and Labrador Department of Environment and Conservation	This task is on-going.
	Improvements/Upgrades to ADRS Desktop Search Engine	Newfoundland and Labrador Department of Environment and Conservation	This task is on-going.
Education/Outreach	Preparation of Technical Program Videos	Newfoundland and Labrador Department	This project was not completed in fiscal year 2014-2015. This project will go ahead as time permits.

		of Environment and Conservation	
	Educational Displays	Newfoundland and Labrador Department of Environment and Conservation	<p>During fiscal year 2014-2015 educational presentations or displays included:</p> <ul style="list-style-type: none"> • World Rivers Day display at Bowring Park • Presentation at Marine Institute on CABIN <p>Also compiled short video on CABIN sampling.</p>
	Updating/Troubleshooting for Fluvarium Project	Newfoundland and Labrador Department of Environment and Conservation	Not complete. To be completed in fiscal year 2015-2016.
	Updating of all Posters	Newfoundland and Labrador Department of Environment and Conservation	To be completed in fiscal year 2015-2016.