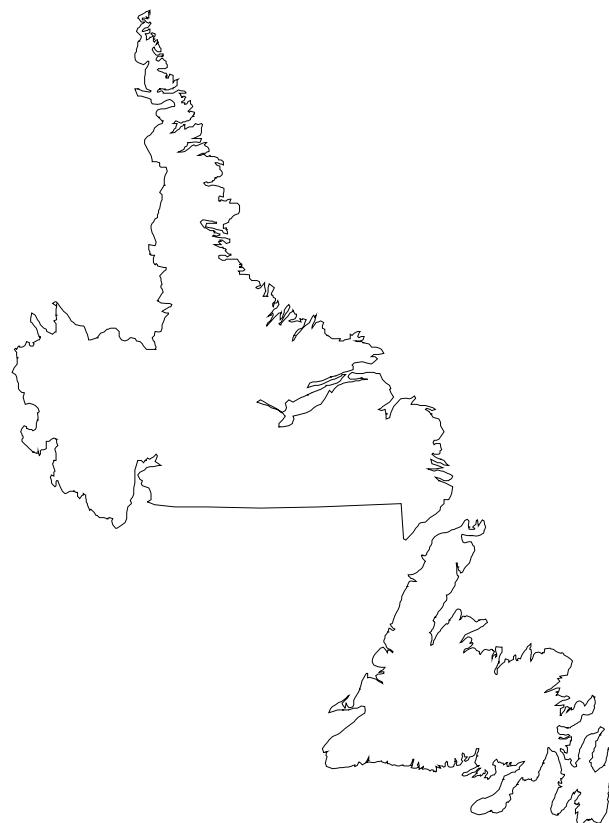


CANADA-NEWFOUNDLAND and LABRADOR WATER QUALITY MONITORING AGREEMENT

Progress Report 2011-2012



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 2011-2012. This document is formatted to reflect the same layout as the 2011-2012 Annual Work Schedule.



Work Shared Activities for Fiscal Year 2011-2012

Work Shared Activities 2011-2012

| Activity | Responsible Agency | Remarks |
|--|--|--|
| Ambient Water Quality Sampling | Newfoundland and Labrador Department of Environment and Conservation | Refer to Table 1 for sampling details in Newfoundland Refer to Table 2 for sampling details in Labrador |
| Ambient Water Quality Analysis | Environment Canada – National Laboratory for Environmental Testing (NLET) | Refer to Table 3 for laboratory analysis details |
| ENVIRODAT and Data Management/Reporting | Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada | Refer to Table 4 for ENVIRODAT projects/tasks Refer to Table 5 for Data Management/Reporting tasks |
| Real-Time Water Quality Monitoring | Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada | Refer to Table 8 for Real-Time Water Quality Monitoring station info |
| Special Projects | Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada | Refer to Table 6 for Special Projects (work shared activities) |

Ambient Water Quality Sampling

During 2011-2012, 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, 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 2012-2013.

Table 1: Provincial Samples Collected in 2011-2012 Fiscal Year in Newfoundland (Island Portion of the Province)

| Station # | Description | Number of Samples Scheduled in 11-12 | Number of Samples Collected in 11-12 |
|-----------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| EASTERN REGION | | | |
| NF02ZK0005 | Northeast River | 8 | 8 |
| NF02ZL0029 | Goulds Brook | 5 | 5 |
| NF02ZM0004 | Waterford River at Commonwealth Ave. | 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 | Rennies River at Carnell Drive | 4 | 4 |
| NF02ZM0020 | Broad Cove Brook | 4 | 4 |
| NF02ZM0098 | Virginia River at headwaters | 4 | 4 |
| NF02ZM0109 | Mundy Pond at Outlet | 4 | 4 |
| NF02ZM0144 | Kelly's Brook at Portugal Cove Rd. | 4 | 4 |
| NF02ZM0175 | Waterford River at Brookfield Rd. | 4 | 4 |
| NF02ZM0176 | South Brook at Mouth | 4 | 4 |
| NF02ZM0177 | Rennies River at Portugal Cove Rd. | 4 | 4 |
| NF02ZM0178 | Learys Brook at Clinch Cres. | 5 | 5 |
| NF02ZM0179 | Virginia River at Guzwell Drive | 4 | 4 |

| Station # | Description | Number of Samples Scheduled in 11-12 | Number of Samples Collected in 11-12 |
|------------------------------|---------------------------------------|---|---|
| NF02ZM0180 | Virginia River at Newfoundland Drive | 4 | 4 |
| NF02ZM0181 | Waterford River at Blackhead Rd. | 5 | 5 |
| NF02ZM0182 | Waterford River at Bremigans Pond | 4 | 4 |
| NF02ZM0183 | Kelligrews River at Kelliview Cres. | 4 | 6 |
| NF02ZM0184 | Learys Brook at Outer Ring Road | 4 | 4 |
| NF02ZM0185 | South Brook at Headwaters | 4 | 4 |
| NF02ZN0004 | Salmonier River | 4 | 4 |
| NF02ZM0294 | Manuals River | 4 | 6 |
| NF02ZM0359 | Paddy's Pond at Outlet | 4 | 3 |
| <u>CENTRAL REGION</u> | | | |
| NF02YM0004 | South West Brook at Baie Verte | 4 | 4 |
| NF02YM0003 | Indian Brook | 4 | 4 |
| NF02YO0189 | Joe's Lake | 4 | 4 |
| NF02YO0107 | Exploits River at Millertown Dam | 5 | 5 |
| NF02YO0020 | Exploits River at Aspen Brook | 4 | 4 |
| NF02YO0001 | Exploits River at Grand Falls | 4 | 4 |
| NF02YO0128 | Exploits River below Grand Falls | 4 | 4 |
| NF02YO0142 | Corduroy Brook | 4 | 4 |
| NF02YO0143 | Exploits River at Bond Bridge | 4 | 4 |
| NF02YR0001 | Pound Cove Brook | 4 | 4 |
| NF02YO0121 | Peter's River | 4 | 4 |
| NF02YQ0006 | North West Gander River | 4 | 4 |
| NF02YQ0030 | Gander River at Appleton | 8 | 8 |
| NF02YS0001 | Terra Nova River at Terra Nova | 4 | 4 |
| NF02YS0011 | Terra Nova River at ES Spencer Bridge | 5 | 5 |

| Station # | Description | Number of Samples Scheduled in 11-12 | Number of Samples Collected in 11-12 |
|------------------------------|---------------------------------------|---|---|
| NF02YS0083 | Northwest River at Terra Nova | 4 | 4 |
| <u>WESTERN REGION</u> | | | |
| NF02YE0004 | Portland Creek | 4 | 4 |
| NF02YE0005 | Western Brook | 5 | 5 |
| NF02YG0001 | Main River at Bridge | 5 | 5 |
| NF02YG0009 | Main River at Paradise Pool | 4 | 1 |
| NF02YG0020 | Eagle Mountain Brook | 4 | 3 |
| NF02YH0018 | Lomond River | 4 | 3 |
| NF02YJ0004 | Pinchgut Brook | 8 | 8 |
| NF02YK0022 | Humber Canal | 4 | 3 |
| NF02YL0011 | Humber River at Little Falls | 4 | 3 |
| NF02YL0012 | Humber River at Humber Village Bridge | 5 | 5 |
| NF02YL0013 | Corner Brook at Margaret Bowater Park | 4 | 3 |
| NF02YL0029 | Wild Cove Brook | 4 | 3 |
| NF02YN0001 | Lloyds River | 5 | 5 |
| NF02ZA0006 | Grand Codroy River | 4 | 3 |
| NF02ZC0020 | Buck Lake | 4 | 3 |
| NF02YN0043 | Peter Stride's Lake | 4 | 3 |

Notes:

1. Total number of samples collected in 2011-12 does include triplicate samples. The total does not include bottle blanks.
2. Total number of samples planned for 2011-12 for Eastern region was 107; 117 were sampled, 7 of these samples were triplicates.
3. Total number of samples planned for 2011-12 for Central region was 70; 78 were sampled, 8 of these samples were triplicates.
4. Total number of samples planned for 2011-12 for Western region was 72; 62 were sampled, 2 of these samples were triplicates.

Table 2: Northern Samples Collected in 2011-2012 Fiscal Year in Labrador

| Station # | Description | Number of Samples Scheduled in 11-12 | Number of Samples Collected in 11-12 |
|-------------------------------|-------------------------------------|---|---|
| <u>LABRADOR REGION</u> | | | |
| NF02XA0001 | Little Mecatina River | 5 | 4 |
| NF03NF0013 | Ugjoktok River | 5 | 3 |
| NF03OC0012 | Atikonak River | 4 | 4 |
| NF03OD0011 | East Metchin River | 4 | 4 |
| NF03OE0001 | Churchill River Above Upper Muskrat | 4 | 5 |
| NF03OE0030 | Minipi River | 5 | 5 |
| NF03OE0032 | Pinus River | 4 | 5 |
| NF03OE0033 | Big Pond Brook | 4 | 5 |
| NF03PB0025 | Naskaupi River | 5 | 5 |
| NF03QC0001 | Eagle River | 5 | 4 |
| NF03QC0002 | Alexis River | 4 | 4 |
| NF03OD0012 | Wilson River E. Branch | 4 | 4 |
| NF03OE0035 | Dominion Lake | 4 | 4 |
| NF03OE0037 | Cache River | 4 | 4 |
| NF03PB0028 | Cape Caribou River | 4 | 4 |
| NF03PB0029 | Northwest River | 4 | 5 |
| NF03PB0030 | Seal Lake Narrows | 4 | 4 |
| NF03PB0032 | Susan River | 4 | 5 |
| NF03PB0037 | Wuchusk Lake | 4 | 3 |
| NF03QA0044 | Carter Basin | 4 | 5 |
| NF03QA0045 | Kenamu River | 4 | 5 |
| NF03OA0020 | Ashuanipi River | 4 | 4 |

Notes:

1. Total number of samples collected in 2011-12 does include triplicate samples. The total does not include bottle blanks.
2. Total number of samples planned for 2011-12 for Labrador region was 93; 104 were sampled, 9 of these samples were triplicates.

Ambient Water Quality Analysis

During 2011-2012, the ambient water quality samples were analyzed at NLET in Burlington, ON. There were no lab issues/delays encountered. All shipping/analysis were carried out as agreed upon in the Annual Work Schedule 2011-2012 as seen in **Table 3**.

Table 3: Analytical Parameters, Holding Times and Schemas for 2011-2012

| Parameter | Holding Times (recommended by NLET) |
|--------------------------|--|
| MAJOR IONS | |
| Alkalinity | 24 hours |
| Chloride | 28 days |
| Sulphate | 28 days |
| Calcium | 8 weeks |
| Magnesium | 8 weeks |
| Sodium | 8 weeks |
| Potassium | 8 weeks |
| PHYSICAL | |
| pH | 24 hours |
| Conductivity | 28 days |
| Colour | 48 hours |
| Turbidity | 24 hours |
| NUTRIENTS | |
| Nitrate | 24 hours |
| Total Nitrogen | 24 hours |
| Total Phosphorus | 1 year |
| DIC/DOC | 24 hours |
| METALS | |
| Total Metals-27 elements | 6 months |

***27 Metals include:**

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

| Schema Number | Schema Name | Parameter/ Grouping |
|---------------|-------------|--|
| 1 | ALKPHCOND | alkalinity, pH, conductivity |
| 2 | MI4-U | Ca, Mg, Na, and K |
| 5 | ANION1-U | NO3 by IC |
| 6 | ANION2-U | Cl and SO4 by IC |
| 11 | TP1-U | total phosphorus |
| 12 | TN1-U | total nitrogen |
| 13 | DIC/DOC1 | dissolved inorganic and organic carbon |
| 22 | HARDNESS1 | Calculation derived from Ca and Mg |
| 23 | COL-APP | Colour-apparent (unfiltered sample) |
| 24 | TURBIDITY3 | turbidity |
| 31 | TM2003/T27W | Total metals-27 elements |

ENVIRODAT and Data Management/Reporting

During 2011-2012, 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: ENVIRODAT – Data Management

| | Management Activities | Lead Agency | Progress Evaluation |
|---|---|--|---|
| Current/Ongoing Special Projects | Data Verification and Validation of Sample/Measurement Data | Environment Canada Newfoundland and Labrador Department of Environment and Conservation – staff | Data validation tool was developed but not implemented. Draft data validation and verification method prepared but still awaiting national consistency. |
| | Variable Grouping | Environment Canada Newfoundland and Labrador Department of Environment and Conservation – staff | Contract for VMV grouping was cancelled due to insufficient resources. |
| Sample Submission | Laboratory procedures and quality control practices | Environment Canada | Proceeded as per EC's protocols. |
| | Entering field data onto field sheets and subsequent submission to laboratory | Newfoundland and Labrador Department of Environment and Conservation – staff | This has been completed and up to date for 2011-2012. |
| | Sample/Project/Station Initialization and Modifications | Environment Canada | Proceeded as per EC's protocols. |

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| Management of national water quality database (ENVIRODAT) | Processing and Loading of NLET Data | Environment Canada | Proceeded as per EC's protocols. |
| | ENVIRODAT ongoing management | Environment Canada | Proceeded as per EC's protocols. |
| | Historical Data Issues and Problem Resolution | Environment Canada Newfoundland and Labrador Department of Environment and Conservation – staff | Issues are being addressed as they are detected. |
| Data Extraction Tool/Web Services | Accessibility/Availability of NL WQMA dataset | Environment Canada | Proceeded as per Environment Canada's protocols. |
| | ENVIRODAT Web Services | Environment Canada Newfoundland and Labrador Department of Environment and Conservation – Paul Neary/Leona Hyde | Ongoing. |
| | ENVIRODAT Data Extraction Tool | Environment Canada | The old extraction tool was maintained for this fiscal year but no improvements. |
| | Regular request of archived NL WQMA data from ENVIRODAT | Newfoundland and Labrador Department of Environment and Conservation – Shibly Rahman | Ongoing – transfer every six months. |

Note: Activities listed in this table are work-shared activities

Table 5: Technical Documents and Reporting

| Project | Activity | Responsible Agency | Progress Evaluation |
|---|--|---|---|
| CANAL / Site Documentation Database / Bacteriological Database | Structural changes/modifications to CANAL webpage | Environment Canada Newfoundland and Labrador Department of Environment and Conservation – Paul Neary/Leona Hyde/Kyla Brake | This project will proceed when the Site Documentation Database update is completed. |
| | Intense ground-truthing and updating of the Site Documentation Database (ie: review of all stations) | Newfoundland and Labrador Department of Environment and Conservation - staff | NL ENVC staff made some progress in updating the required information for select stations, using a tiered approach in 2011-2012. This project will continue in fiscal year 2012-2013. |
| | On-going <u>maintenance</u> of the Site Documentation Database | Newfoundland and Labrador Department of Environment and Conservation – staff | This is an on-going task that will be performed after the Site Documentation Database project has been completed. |
| | On-going <u>populating</u> of the Site Documentation Database | Newfoundland and Labrador Department of Environment and Conservation – Paul Neary/Rob Holloway | This is an on-going task that will be performed after the Site Documentation Database project has been completed. |
| | On-going <u>maintenance</u> of the Bacteriological Database | Newfoundland and Labrador Department of Environment and Conservation – Staff | No bacterial monitoring took place in 2011-2012; therefore a update of the bacteriological database was not necessary. |
| | On-going updating of the Water Quality Index scores | Newfoundland and Labrador Department of Environment and | This is an on-going task that will be performed after the Site Documentation Database project has been completed. |

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| | | Conservation – Kyla Brake/Paul Neary | |
| | Development of Fact Sheets for selected WQMA stations | Newfoundland and Labrador Department of Environment and Conservation – Kyla Brake | This is an on-going task that will be performed after the Site Documentation Database project has been completed. |
| | Delineation and digitization of all WQMA stations (Newfoundland and Labrador); including any new stations added (ie: CABIN: real-time) | Newfoundland and Labrador Department of Environment and Conservation - Keith Abbott | This project is multi-phased with initial progress made in determining the batch methodology to undertake the delineation in fiscal year 2011-2012. This project will continue in fiscal year 2012-2013. |
| Automatic Data Retrieval System (ADRS) | On-going Real-time Service Delivery (ADRS – reporting) | Newfoundland and Labrador Department of Environment and Conservation – Paul Neary/Leona Hyde | This task was an on-going activity throughout 2011-2012. This activity will continue in fiscal year 2012-2013. |
| | Upgrades to ADRS as needed | Newfoundland and Labrador Department of Environment and Conservation – Paul Neary/Leona Hyde | Upgrades are performed as they are required. This is an on-going task and will continue in fiscal year 2012-2013. |
| | Continued testing/Review of ADRS Search Engine | Newfoundland and Labrador Department of Environment and Conservation - staff | This task was an on-going activity throughout 2011-2012. This activity will continue in fiscal year 2012-2013. |
| | Improvements to ADRS Search Engine | Newfoundland and Labrador Department of Environment and Conservation – Paul Neary/Leona Hyde | Improvements are made as issues are identified. This is an on-going task that will continue in fiscal year 2012-2013. |
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|-----------------------------------|---|--|--|
| | Implementation of Automated Deployment Spreadsheet into ADRS | Newfoundland and Labrador Department of Environment and Conservation – Paul Neary/Leona Hyde | This project has been deferred to fiscal year 2013-2014. Testing of the deployment spreadsheet is on-going by staff. |
| | Maintenance of Inventory/Servicing Spreadsheet | Newfoundland and Labrador Department of Environment and Conservation – Tara Clinton | This document is currently up to date. It will be periodically updated throughout 2012-2013. |
| | Maintenance of camera technology at Leary's Brook Real-Time Station | Environment Canada Newfoundland and Labrador Department of Environment and Conservation – Paul Neary/Leona Hyde/Ryan Pugh | This activity was completed in 2011-2012. The work on this activity included adjusting the camera position, improving the image resolution, and establishing a staff gauge measurement tool as a visual reference point. |
| WQMA Search Engine | Development and Testing of WQMA Search Engine (utilizing EC web services) | Newfoundland and Labrador Department of Environment and Conservation – Paul Neary/Leona Hyde | Due to developments from EC (ie: potential to discontinue use of web services), this project is on hold until further notice. |
| Technical Documents – WQMA | Maintenance of NL-WQMA Sampling Manual | Newfoundland and Labrador Department of Environment and Conservation – Joanne Sweeney | Updates to applicable NL material (appendix to main manual) are made as needed. |

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|-----------------------------------|---|---|--|
| | Completion of Intensive Survey 2009-10 Report (Bonne Bay Ponds) | Environment Canada Newfoundland and Labrador Department of Environment and Conservation – Ian Bell | All water quality and sediment data was received and processed, draft mapping was concluded and the report outline was finished with 50% of the draft content completed. WRMD will finalize this report in 2012-2013 with final review being carried out by EC in 2013-2014. |
| | Updating of the Trend Analysis Report | Newfoundland and Labrador Department of Environment and Conservation – Shibly Rahman | The existing Trend Analysis Report was reviewed and analyzed. A document was then created listing the Trend Analysis requirements for stations and variables. Data was compiled including, Variables used in Envirodat, variables used by Paula, and CESI Variables. Compiled stations queried from Envirodat with more than 10 years of data. This data was compared with the stations used in the existing report. Compiled existing trend analysis methodologies and parameters used in these methodologies in a tabular format using available literature. |
| | On-going updating of WQMA website | Newfoundland and Labrador Department of Environment and Conservation – Joanne Sweeney/Paul Neary | Updates to links and WQMA information are performed as they are required. |
| Technical Documents - RTWQ | Real-Time Water Quality Deployment and Annual Reports | Newfoundland and Labrador Department of Environment and Conservation – staff | Please refer to Table 8 . |
| | Completion of Real-Time Water Quality Manual | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson/Grace Gillis/Tara Clinton/Ryan Pugh | The majority of the preparation for this report was done in 2011-2012. Activities included, finalizing the procedures and protocols based on pilot study. Compiled photos, diagrams, and schematics. Worked on the document structure, table of contents, scope, and purpose. Assigned specific report sections to individuals based on expertise. Began to compile first draft. |

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|-----------------------------|--|---|---|
| | Completion of Bio-fouling Report | Newfoundland and Labrador Department of Environment and Conservation – Tara Clinton | This report has been reviewed and drafted for submission onto the WRMD website. There are some small changes to be made with formatting and the appendix and should be ready for final draft in 2012-2013. |
| | On-going updating of Real-Time Water Quality Website | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson/Paul Neary | This task is on-going. |
| Education / Outreach | Educational Displays | Newfoundland and Labrador Department of Environment and Conservation – Kyla Brake | The educational displays for fiscal year 2011-2012 have been completed as follows: a) divisional brochure; b) presentation at the Marine Institute; c) Real-Time poster completed for the Real-Time Water Quality workshop. |
| | Maintenance/Trouble-shooting the real time water monitoring display at the Fluvarium | Environment Canada <hr/> Newfoundland and Labrador Department of Environment and Conservation – Kyla Brake | An issue was identified with the display at the Fluvarium. One of the real-time stations used for the display was removed and it requires the addition of a new station to function properly. This problem was not resolved in 2011-2012 and work will take place in 2012-2013. |
| | Updating of all posters | Newfoundland and Labrador Department of Environment and Conservation – Kyla Brake | This project has been deferred to 2013-2014 fiscal year. |

Note: Activities listed in this table are work-shared activities

Table 6: Special Projects for Fiscal Year 2011-2012 (work shared activities)

| Project | Activity | Responsible Agency | Progress Evaluation |
|--|---|---|--|
| Automated Uploading of Field Data | Testing of equipment that is capable of automatically uploading field data into correct forms as required by the laboratory | Environment Canada Newfoundland and Labrador Department of Environment and Conservation - staff | This project has been deferred to a later date, if equipment becomes available. |
| Site-specific Guidelines Project | Development of site-specific guidelines for select NL water bodies | Newfoundland and Labrador Department of Environment and Conservation – Kyla Brake/Joanne Sweeney | There was some discussion regarding the terminology to be used for this project as well as the path forward. This project will continue in fiscal year 2012-2013. |
| Mobile Environmental Monitoring Platform (MEMP) | In-situ water quality/quantity monitoring using a mobile environmental monitoring platform on a need-basis across the province | Newfoundland and Labrador Department of Environment and Conservation – Ryan Pugh Environment Canada – WQMS | The MEMP was deployed on Outer Cove Bridge in Torbay, Middle Cove, Outer Cove. WRMD Staff attempted to make a Spectro::Lyser connection to MEMP in June 2011, without success. In July, a Satlink II logger and water level sensor were installed. |
| Blue-green Algae Monitoring | Monitoring of blue-green algae on a need basis (Paddy's Pond and surrounding water bodies) | Newfoundland and Labrador Department of Environment and Conservation – Joanne Sweeney | On-going monitoring and sampling when deemed necessary. |
| Automated Weather Stations | Operation of four automated weather stations to provide valuable climate information to support water quantity and quality analysis | Newfoundland and Labrador Department of Environment and Conservation – staff | This task is on-going. |

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| Application of Earth Observation for Water Quality Monitoring | Assessing if Earth Observations can be used to monitor the impact of development projects on water resources. Building knowledge in using high resolution data/imagery to extract water resources related information such as land cover, wetlands and water bodies | Newfoundland and Labrador Department of Environment and Conservation – Keith Abbott | Researched water quality monitoring products provided by Blue Water Satellite Inc., including products monitoring Cyanobacteria, Total Phosphorus, Chlorophyll- <i>a</i> , and total vegetation coverage derived from Landsat-5 & -7 data. |
| 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 – staff | A path forward to approach the network evaluation and optimization was developed in 2011-2012. Progress on this activity included formulating a query on HYDAT database to retrieve flow and precipitation data for NL WQMA stations. Identifying climate stations in NL under the climate agreement and checking for stations with more than 30 years of data, and creating a dendograph using R programming. |
| Real-Time Related Projects | Trouble-shooting with issues at real-time stations | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson | This is an on-going task. |
| | Audit real-time stations visits/meet with clients | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson | Numerous meetings were held between WRMD and select industry clients as follows: - Teck (Duck Pond Operations) (May 2011); Nalcor Energy (May & July 2011); Vale-Long Harbour Project (April, July & November 2011; quarterly Community Liaison Committee meetings); Miawpukek First Nations (June 2011, October 2011); Vale – Voisey's Bay Project (March 2012). Additional conference calls and email correspondence aided in open communication between WRMD and industry clients throughout 2011-2012. |

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| | Planning for Real-Time Water Quality Monitoring for Mega-projects | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson | This is an on-going task. Numerous Environmental Assessment registration documents are reviewed annually to determine if real-time water quality monitoring is needed. |
| | Negotiating/renewals of Memorandum of Agreements with industry | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson | Tata Steel Minerals Canada Limited signed a MOA in April 2011; The City of St. John's signed a new MOA in July 2011; Nalcor Energy (Lower Churchill Project) signed an extension to their MOA January 2012; Vale (Voisey's Bay Project) signed an extension to their MOA in March 2012; and Teck (Duck Pond Operations) signed an extension to their MOA in March 2012. |
| | Provide training on procedures to clients | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson/Grace Gillis/Robert Wight/Tara Clinton/Ryan Pugh | Training sessions were held in May 2011 in Goose Bay, NL for staff from Labrador Iron Mines and Vale (Voisey's Bay Project). Hands on training was provided to staff of Miawpukek First Nations as needed. |
| | Regular graph review and alerting appropriate staff | Newfoundland and Labrador Department of Environment and Conservation – Tara Clinton | This is an on-going task. Periodically all real-time water quality graphs are reviewed by Tara Clinton. Additionally, the staff responsible for each station also checks the online graphs daily for items of interest. |
| | Advanced specialized training on servicing/repair of HACH equipment | Newfoundland and Labrador Department of Environment and Conservation – Tara Clinton/Ryan Pugh | The advanced training of two WRMD staff took place during the previous fiscal year (2010-2011) in Loveland, Colorado. |
| | Establishment of Quality Control Laboratory | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson/staff to be determined | Renovations to the workspace in the Howley building were completed throughout spring/summer 2011-2012. This was the initial PTE year. WRMD staff organized a regional schedule and ordered the required parts and supplies. Staff also performed PTEs and made repairs where necessary. Approximately 40 PTE's were done by staff in this fiscal year. |

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| | Instrumentation to monitor water quality at key joint monitoring sites | Environment Canada Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson/Tara Clinton/Ryan Pugh | Instrumentation was maintained/repaired for water quality at key joint monitoring sites. |
| | Review/Revision of QA/QC protocols for Real-Time Water Quality data | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson/Tara Clinton/Ryan Pugh/Grace Gillis | A draft report was generated that documented the findings of the pilot project. The report will be reviewed in house and by EC colleagues in fiscal year 2012-2013. It will be finalized and posted on the departmental webpage in fiscal year 2013-2014. |
| | Continued Testing and Implementation of new Automated Deployment Spreadsheet | Newfoundland and Labrador Department of Environment and Conservation – Ryan Pugh/Leona Hyde | Throughout the fiscal year 2011-2012, all field staff continued to use/test the spreadsheet for data grooming and reporting. |
| | Host 3 rd national Real-Time Water Quality Monitoring Workshop 2011 (June 2011) | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson/Tara Clinton | The 3 rd Real Time Water Quality Monitoring Workshop was hosted in St. John's, NL on June 7 th and 8 th , 2011. The workshop was well attended with over 60 participants with a total of 11 presentations and 3 discussion groups relating to real-time water quality monitoring. |
| | Comparison Study between Various Turbidity Monitoring Instrumentation | Newfoundland and Labrador Department of Environment and Conservation – Ryan Pugh Environment Canada | Comparison study between YSI Turbidity Probe, Hydrolab Turbidity Probe and DTS-12 Turbidity Probe. Installed monitoring gear in September and removed in October. Produced paper titled “Comparison of Three Turbidity Instruments: DTS-12, YSI, and Hydrolab”. The Report will be reviewed in house and posted on the departmental webpage in fiscal year 2013-2014. |

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| | Categorization of Turbidity Alerts | Newfoundland and Labrador Department of Environment and Conservation – Tara Clinton/Shibly Rahman/Leona Hyde | The technical working group had initial meetings to better understand concepts associated with categorizing turbidity alert values. This project will continue in fiscal year 2012-2013 |
| | Organization of Datalogger Programming Course of all real-time staff | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson | A select number of WRMD staff took part in a training course on the CR-1000 datalogger, hosted by Campbell Scientific on June 6, 2011. |
| | Coordination of Temperature Probe Installation | Newfoundland and Labrador Department of Environment and Conservation – Joanne Sweeney | Water temperature probes have been installed at all WQMA-Hydrometric co-located stations, where flow and ice conditions deem it practical. |
| | Establishment of Standalone Station on Paddy's Pond (testing of communication equipment; testing of instrumentation) | Newfoundland and Labrador Department of Environment and Conservation – Ryan Pugh/Joanne Sweeney | WRMD staff installed monitoring equipment in September 2011. Equipment included a Sutron Satlink II datalogger equipped with a Hydrolab DS5X. The initial transmission of data occurred on September 22 nd , 2011. |
| | Statistical project to determine extrapolation of non-measured data at select real-time stations | Newfoundland and Labrador Department of Environment and Conservation – Shibly Rahman Environment Canada | Progress on this item in 2011-2012 includes, finalized data compilation (grab samples) from the four chosen stations (Leary's Brook, Rattling Brook Below Bridge, Waterford River and Humber River), created scatter plots for the four stations, performed normality and box plots, compiled minimum and maximum values for certain parameters. The models were tabulated and graphed. Also, computed bias correction and compared model to grab samples. |
| | LCD Screen Display | Newfoundland and Labrador Department of Environment and Conservation – Renee Paterson/Paul Neary/Leona Hyde | This project is approximately 80% complete; WRMD staff contributed their ideas as to what should be displayed. This project will continue in 2012-2013. |

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| | Preparation of “Application Note” for HACH web page detailing case study – VALE (Long Harbour Project) | Newfoundland and Labrador Department of Environment and Conservation – Tara Clinton | This has been deferred to a later date. |
| | In-depth data analysis for real-time stations in partnership with Teck (Duck Pond Operations) | Newfoundland and Labrador Department of Environment and Conservation – Robert Wight | This project was completed in fiscal year 2011-2012. |
| | Definition of parameter limits for email alert system; implementation of email alert system | Newfoundland and Labrador Department of Environment and Conservation – Tara Clinton/Kyla Brake | Ongoing. The email alerting system is still operating for the stations associated with the Vale Long Harbour Project. The email alert system will be extended and applied to other stations throughout the province in 2012-2013. |
| | Testing and implementation of autosampler technology at select real-time stations | Newfoundland and Labrador Department of Environment and Conservation – Tara Clinton/Ryan Pugh | This task has been put on hold until an opportunity is presented to revisit the technology. |
| | Testing, implementation and integration of S::CAN technology into real-time program | Newfoundland and Labrador Department of Environment and Conservation – Ryan Pugh | Worked on connecting Spectro:lyser to MEMP’s CR1000 logger in June 2011, without success. Needs additional consultation when time permits. |
| | Collaboration/transfer of knowledge on set up and deployment of UV sensor owned by EC | Environment Canada Newfoundland and Labrador Department of Environment and Conservation – Ryan Pugh | Informal discussions occur as EC deems necessary and when new information becomes available. |

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| | Collaboration / transfer of knowledge on set up and deployment of buoys owned by EC | Newfoundland and Labrador Department of Environment and Conservation – Ryan Pugh | Informal discussions occur as EC deems necessary and when new information becomes available. |
| | Research and development of new technologies | Newfoundland and Labrador Department of Environment and Conservation – Ryan Pugh/Tara Clinton/Renee Paterson | An introduction to new technologies is gained through informal and ongoing discussions with presenters at conferences/trade shows. |
| Partnering on technical projects | Partnering with various organizations in collaborative effort to investigate new and innovative techniques and technologies | Newfoundland and Labrador Department of Environment and Conservation – staff | There were no additional partnerships investigating new innovative technologies initiated in fiscal year 2011-2012. |

Cost Shared Activities for Fiscal Year 2011-2012

Table 7: Cost Shared Activities 2011-2012

| Project | Progress Evaluation |
|---|--|
| Canadian Aquatic Biomonitoring Network (CABIN) -Monitoring of benthic invertebrates to better assess the aquatic ecosystem health to complement physical chemical work. -Investigation into new research and development in the field of aquatic biomonitoring, notably in context of new decision tools. -Completion of Baseline Report on Reference Invertebrate Assemblages in NL, as part of the initial investment for long term effect based monitoring. -Poster presentation at the Canadian Water Resources Association Workshop in June 2011 and the Science and Technology Forum (Atlantic Canada) in November 2011. | - Monitoring of benthic invertebrates to better assess the aquatic ecosystem health to complement physical chemical work was completed. - Investigation into new research and development in the field of aquatic biomonitoring is ongoing as new techniques and methods become known. - Recent sites have been created and will be included in report. - This task was completed. -There were a total of 18 CABIN sampling sites in Newfoundland and Labrador during fiscal year 2011-2012. |
| Canadian Environmental Sustainability Indicators (CESI) Provincial Input to National CESI Reporting -Site selection, water quality data extraction, and manipulation. -Decision on WQI inputs and calculation of ratings for each core CESI station. -Overview interpretation of results (short document on parameters &issue driving the ratings and | - Site selection, water quality data extraction and manipulation was completed for 2011-2012. The CESI WQI Calculator was tested by EC and NL ENVC with any issues being addressed as they arose throughout the fiscal year. - Decision on WQI inputs and calculation of ratings for each station was completed. - Overview interpretation of results was completed. |

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| <p>spatial trends; issues encountered; etc.).</p> <p>-Data analysis and report preparation. NL will validate/contribute to CESI core sites review for longer term WQI national reporting.</p> <p>-Sensitivity analysis sampling frequency on WQI score study using selected core CESI stations. (Note: This study requires three years of data which will be completed in 2012-2013)</p> | <p>- Data analysis and report preparation was completed for 2011-2012.</p> <p>- Sensitivity analysis sampling frequency on WQI score study is on-going, 3 years of data is required.</p> |
| <p>Canadian Environmental Sustainability Indicators (CESI)</p> <p>Modifications/Improvements to CESI Calculator</p> <p>-Provision of fixes/solutions to issues encountered with calculator</p> <p>-Documentation of issues/fixes</p> <p>-Improvements to the Help Manual</p> <p>-Modifications regarding storing of information in Access (ie: storing of metal variables using hardness based guidelines; storing confidence intervals and related results; etc.)</p> | <p>- All issues/resolutions were documented in a detailed spreadsheet and distributed as part of the final deliverable package.</p> <p>- Year 3 developments were added to the CESI WQI Help Manual.</p> <p>- Detection Limit Storing for Confidence Interval: Detection limit keyword stored in the CESI WQI database and been added for the three options when confidence interval is computed. These are: « DL » if the method of replacement uses the value of the Detection Limit « HF » if the method of replacement uses the value of Half the Detection Limit « ZR » if the method of replacement uses the value Zero</p> <p>- Valid Detection Limit Symbol: Of the two less than detection limit symbol (“L” and “<”), only “L” is stored in the database.</p> <p>- NULL values: All textual NULL values is converted to CHAR(0) before it is exported into the Access database.</p> <p>- Storing metal based hardness guidelines: All hardness based metal guidelines are now stored in the CESI WQI Database. Modification has been made in the code to incorporate this change.</p> |

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| <ul style="list-style-type: none">-Addressing issues as identified by EC (ie: less than detects; commas; index periods; invalid units; null values; etc.)-Initiate investigation into how to make the product accessible to CCME | <ul style="list-style-type: none">- Storing hardness, pH and temp sample values: All hardness, pH and temp sample values are stored in its proper location in the CESI WQI Database. Modification has been made in the code to incorporate this change.- Storing Confidence Interval: The confidence interval is stored in the CESI WQI Database. Modification has been made in the code to incorporate this change.- Test Application: A test application has been sent to EC which check that no comma is appearing in the exported Access Database. The same logic has been incorporated to exclude comma from the input file of the Calculator.- IndexPeriod: A second option for IndexPeriod has been added which allows the user to use the valid Index Period stated in the IndexPeriod column. The word “IndexPeriod” should not have any gap in between.- Capitalization of Compliance_id: All compliance id has been capitalized to reduce error when data is transferred from the exported CESI Access Database to the Enterprise SQL database.- Valid Variable_id and Unit_id: Variable_id and Unit_id are checked against the valid Variable and unit id stored in the Web Service. If variable/units are valid then the Calculator detects it with a green background. Otherwise red background will appear for invalid variable/unit. The background of a cell changes from red to green when valid variable/unit id is selected. Message has been added for the unit conversion when invalid units are changed to valid units in the User Guideline where the user needs to be warned to ensure that the correct conversion has been made manually in the actual input file.- The help manual was used to make this product accessible to CCME. |
| <p>Canadian Environmental Sustainability Indicators (CESI)</p> <p>Northern Sampling and Analysis (Labrador)</p> <ul style="list-style-type: none">-Labrador water samples are collected by both federal and provincial staff in support of CESI reporting (for more remote core sites). | <ul style="list-style-type: none">- Northern sampling and analysis proceeded as outlined in the Annual Work Schedule 2011-2012. See Table 2. |

In fiscal year 2011-2012, select WRMD staff attended and presented at many conferences and training initiatives. They are as follow:

- Swiftwater Rescue
- Wilderness First Aid
- Wildlife Encounters
- Chemistry for Water and Wastewater
- CWRA Conference
- CABIN (Canadian Aquatic Biomonitoring Network)
- Working Alone Safety workshop
- CR1000 Data Logger
- Clean and Safe Drinking Water workshop
- Fall Protection
- WHMIS
- GIS – Spatial Statistic Tools
- Northeast Avalon NAACAP workshop
- CESI/CCME workshop
- Effective Safety Talks
- Problem Solving Training
- First Aid

Table 8. Monthly and Annual Real-Time Water Quality Reports Completed for 2011-2012

| Networks | Partners | Station Name | Monthly Deployment Reports | Annual Deployment Reports |
|---------------------------|---------------------|--------------------------------------|--|----------------------------------|
| Industry Partners Network | Vale (Voisey's Bay) | Upper Reid Brook | Jun 19, 2011– Jul 20, 2011 Aug 31, 2011 – Sep 27, 2011 Sep 28, 2011 – Oct 28, 2011 *Removed Winter Months | Jun 2011 – Oct 2011 |
| | | Lower Reid Brook | Jun 19, 2011– Jul 20, 2011 Aug 31, 2011 – Sep 27, 2011 Sep 28, 2011 – Oct 28, 2011 *Removed Winter Months | Jun 2011 – Oct 2011 |
| | | Camp Pond Brook | Jun 19, 2011– Jul 20, 2011 Aug 31, 2011 – Sep 27, 2011 Sep 28, 2011 – Oct 28, 2011 *Removed Winter Months | Jun 2011 – Oct 2011 |
| | | Tributary to Lower Reid Brook | Jun 19, 2011– Jul 20, 2011 Aug 31, 2011 – Sep 27, 2011 Sep 28, 2011 – Oct 28, 2011 *Removed Winter Months | Jun 2011 – Oct 2011 |
| | Vale (Long Harbor) | Rattling Brook below Bridge | Mar 28, 2011 - Apr 28, 2011 Apr 29, 2011 – Jun 16, 2011 Jun 17, 2011 – Jul 20, 2011 Jul 21, 2011 – Aug 11, 2011 Aug 12, 2011 – Sep 27, 2011 Sep 28, 2011 – Nov 03, 2011 Nov 04, 2011 – Dec 1, 2011 Dec 2, 2011 – Jan 12, 2011 Jan 13, 2012 – Feb 16, 2012 Feb 17, 2012 – Mar 29, 2012 | Mar 2011 – Jan 2012 |
| | | Rattling Brook Big Pond | *Instrument removed due to ice conditions Apr 29, 2011 – Jun 16, 2011 Jun 17, 2011 – Jul 20, 2011 Jul 21, 2011 – Aug 11, 2011 Aug 12, 2011 – Sep 27, 2011 Sep 28, 2011 – Nov 03, 2011 Nov 04, 2011 – Dec 1, 2011 Dec 2, 2011 – Jan 12, 2011 Jan 13, 2012 – Feb 16, 2012 Feb 17, 2012 – Mar 29, 2012 | Mar 2011 – Jan 2012 |
| | | Rattling Brook below Plant Discharge | Mar 28, 2011 - Apr 28, 2011 Apr 29, 2011 – Jun 16, 2011 Jun 17, 2011 – Jul 20, 2011 Jul 21, 2011 – Aug 11, 2011 Aug 12, 2011 – Sep 27, 2011 Sep 28, 2011 – Nov 03, 2011 Nov 04, 2011 – Dec 1, 2011 Dec 2, 2011 – Jan 12, 2011 Jan 13, 2012 – Feb 16, 2012 Feb 17, 2012 – Mar 29, 2012 | Mar 2011 – Jan 2012 |

| Networks | Partners | Station Name | Monthly Deployment Reports | Annual Deployment Reports |
|---------------------------|-----------------------------|-------------------------------------|---|----------------------------------|
| Industry Partners Network | Duck Pond Operations (TECK) | Tributary to Gills Pond Brook | Nov 30, 2011 – May 3, 2011 May 5, 2011 – Jul 12, 2011 Jul 14, 2011 – Aug 8, 2011 Aug 10, 2011 – Sep 16, 2011 Sep 20, 2011 – Nov 1, 2011 Nov 3, 2011 – Dec 31, 2011 Jan 1, 2012 – May 10, 2012 | Jan 2011 – Dec 2011 |
| | | East Pond Brook | Dec 2, 2011 – May 3, 2011 May 5, 2011 – Jul 12, 2011 Jul 14, 2011 – Aug 8, 2011 Aug 10, 2011 – Sep 16, 2011 Sep 20, 2011 – Nov 1, 2011 Nov 3, 2011 – Dec 31, 2011 Jan 1, 2012 – May 10, 2012 | Jan 2011 – Dec 2011 |
| | | Well After Tailings Dam – Duck Pond | Oct 21, 2010 – May 3, 2011 May 12, 2011 – Jul 12, 2011 *Instrument failed immediately and was removed Sep 7, 2011 – Sep 16, 2011 Sep 20, 2011 – Nov 1, 2011 Nov 3, 2011 – Dec 31, 2011 Jan 1, 2012 – May 10, 2012 | Jan 2011 – Dec 2011 |
| | IOC | Wabush Lake at Dolomite Road | Jun 5, 2011 – Jul 17, 2011 Jul 17, 2011 – Aug 14, 2011 Aug 17, 2011 – Sep 20, 2011 Sep 22, 2011 – Oct 16, 2011 *Removed Winter Months | Jun 2011 – Oct 2011 |
| | | Wabush Lake at Julianne Narrows | Jun 5, 2011 – Jul 19, 2011 Jul 19, 2011 – Aug 16, 2011 Aug 16, 2011 – Sep 22, 2011 Sep 22, 2011 – Oct 16, 2011 *Removed Winter Months | Jun 2011 – Oct 2011 |

| Networks | Partners | Station Name | Monthly Deployment Reports | Annual Deployment Reports |
|---------------------------|---|---|---|----------------------------------|
| Industry Partners Network | Nalcor | Above Muskrat Falls | May 26, 2011 – Jun 29, 2011 Jun 29, 2011 – Aug 2, 2011 Aug 2, 2011 – Sep 1, 2011 Sep 1, 2011 – Oct 4, 2011 Oct 5, 2011 – Nov 1, 2011 *Removed Winter Months | May 2011 – Nov 2011 |
| | | Below Metchin River | May 27, 2011 – Jun 29, 2011 Jun 29, 2011 – Aug 2, 2011 Aug 2, 2011 – Sep 1, 2011 Sep 1, 2011 – Oct 4, 2011 Oct 4, 2011 – Nov 1, 2011 *Removed Winter Months | May 2011 – Nov 2011 |
| | | 6.15km below Muskrat Falls | May 27, 2011 – Jun 29, 2011 Jun 29, 2011 – Aug 2, 2011 Aug 3, 2011 – Sep 1, 2011 Sep 2, 2011 – Oct 5, 2011 Oct 4, 2011 – Nov 1, 2011 *Removed Winter Months | May 2011 – Nov 2011 |
| | | Below Grizzle Rapids | *Instrument not deployed due to ice conditions Jun 29, 2011 – Aug 2, 2011 Aug 2, 2011 – Sep 1, 2011 Sep 1, 2011 – Oct 4, 2011 Oct 4, 2011 – Nov 1, 2011 *Removed Winter Months | May 2011 – Nov 2011 |
| Industry Partners Network | Tata Steel Minerals Canada Limited (TSMC) | Elross Creek Below Pinette Lake Inflow | | October 2011 |
| | | Goodream Creek 2KM Northwest of Timmins 6 | | October 2011 |

| Networks | Partners | Station Name | Monthly Deployment Reports | Annual Deployment Reports |
|--------------------|---------------------|---------------------------------------|--|----------------------------------|
| Provincial Network | Labrador Iron Mines | James Creek Above Bridge | Jun 4, 2011 – Jul 15, 2011 Jul 16, 2011 – Aug 13, 2011 Aug 13, 2011 – Sep 19, 2011 Sep 19, 2011 – Oct 16, 2011 *Removed Winter Months | Jun 2011 – Oct 2011 |
| | | Unnamed Tributary Below Settling Pond | Jun 4, 2011 – Jul 15, 2011 Jul 16, 2011 – Aug 13, 2011 Aug 13, 2011 – Sep 19, 2011 Sep 19, 2011 – Oct 16, 2011 *Removed Winter Months | Jun 2011 – Oct 2011 |
| | NL WRMD | Lake Melville East of Little River | May 27, 2011 – Jun 30, 2011 Jun 30, 2011 – Aug 3, 2011 Aug 3, 2011 – Sep 2, 2011 Sep 2, 2011 – Oct 5, 2011 Oct 5, 2011 – Nov 2, 2011 *Removed Winter Months | N/A |
| | | Churchill River at English Point | May 27, 2011 – Jun 29, 2011 Jun 30, 2011 – Aug 3, 2011 Aug 3, 2011 – Sep 1, 2011 Sep 1, 2011 – Oct 5, 2011 Oct 5, 2011 – Nov 2, 2011 *Removed Winter Months | N/A |
| | | Minipi River | May 26, 2011 - Jun 29, 2011 Jun 29, 2011 – Aug 2, 2011 Aug 2, 2011 – Sep 2, 2011 Sep 2, 2011 – Oct 4, 2011 Oct 4, 2011 – Nov 3, 2011 *Removed Winter Months | N/A |

| Networks | Partners | Station Name | Monthly Deployment Reports | Annual Deployment Reports |
|--------------------|-----------------|---------------------------------------|---|----------------------------------|
| Provincial Network | NL WRMD | Southwest Brook below Southwest Pond | Mar 22, 2011 – Apr 25, 2011 Apr 26, 2011 – May 28, 2011 May 29, 2011 – Jul 24, 2011 Jul 25, 2011 – Sep 12, 2011 Sep 13, 2011 – Oct 23, 2011 Oct 24, 2011 – Dec 1, 2011 Dec 2, 2011 – Jan 23, 2012 Jan 24, 2012 – Mar 14, 2012 Mar 14, 2012 – Jul 11, 2012 | N/A |
| | | Leary's Brook at Prince Philip Drive | Dec 15, 2010 – Apr 27, 2011 Apr 27, 2011 – Aug 26, 2011 Aug 26, 2011 – Feb 15, 2012 Feb 15, 2012 – Aug 7, 2012 | N/A |
| | | Humber River at Humber Village Bridge | Feb 24, 2011 - Jun 24, 2011 Jun 24, 2011 - Aug 11, 2011 Aug 11, 2011 - Nov 1, 2011 Nov 25, 2011 - Feb 14, 2012 Feb 15, 2012 - May 03, 2012 | N/A |
| | | Waterford River at Kilbride | Mar 29, 2011 – May 3, 2011 May 3, 2011 – Jun 15, 2011 Jun 15, 2011 – Jul 21, 2011 Jul 22, 2011 – Aug 26, 2011 Aug 26, 2011 – Nov 9, 2011 *No report due for this period due to data transmission malfunctions. Jan 23, 2012 – Mar 2, 2012 Mar 2, 2012 – Apr 11, 2012 | N/A |

Conclusion

A significant amount of work took place under the *Canada-Newfoundland and Labrador Water Quality Monitoring Agreement* for fiscal year 2011-2012. The number of available products from this program continues to grow annually. Activities for 2012-2013 will be clearly outlined in the upcoming Annual Work Schedule.

In 2011, the WRMD's Real-Time Water Quality Program was awarded the Environmental Award by PEGNL (Professional Engineers and Geoscientists of Newfoundland and Labrador). This award recognizes the application of science, technology and engineering to human and resource environmental management in Newfoundland and Labrador.

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*.

