Real Time Water Quality Report

Tata Steel Minerals Canada
Elross Lake Network

Annual Deployment Report 2011

Government of Newfoundland & Labrador
Department of Environment and Conservation
Water Resources Management Division
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Acknowledgements

The Real-Time Water Quality/Quantity Monitoring Network in the vicinity of the Elross Lake Iron Ore Mine in western Labrador is fully funded by Tata Steel Minerals Canada Limited (TSMC) and its success is dependent on a joint partnership between TSMC, Environment Canada (EC), and the Newfoundland & Labrador Department of Environment & Conservation (ENVC). Managers and program leads from each organization, namely Renee Paterson (ENVC), Bob Picco (ENVC), Loic Didillon (TSMC), and Howie Wills (EC), are committed to the operation of this network and ensuring that it provides meaningful and accurate water quality/quantity data.

In addition to funding this program, TSMC also assisted ENVC and EC staff with fieldwork operations, gauge house construction, equipment purchasing, and equipment storage. TSMC employees who were helpful in this regard included Donna O'Quinn, Henry Simpson, Loic Didillon, Praveen Kumar Jha, Arindam Sarkar, and Elisabeth Benoît.

EC plays an essential role in the data logging/communication aspect of the network. In particular, EC staff of the Meteorological Service of Canada Division, including Brent Ruth, Perry Pretty, Roger Ellsworth, Dwayne Ackerman, and Mike Ludwicki visited station sites for reconnaissance work and for the station installation. EC also plays the lead role in managing water quantity data.

ENVC is responsible for recording and managing water quality data. Keith Abbott is ENVC's main contact for Real-Time Water Quality Monitoring operations at the Elross Lake Mine, and had assisted EC in selecting sites for the network stations and delivering monitoring equipment to the stations. ENVC employees that also assisted with this work included, Ian Bell, and Grace Gillis.

Summary

- An agreement was signed on April 18, 2011, between the Newfoundland & Labrador Department of Environment & Conservation (ENVC) and Tata Steel Minerals Canada Limited (TSMC), to establish two real-time water quality/quantity stations in the vicinity of Elross Lake Iron Ore Mine in western Labrador, near Schefferville, QC.
- The purpose of these stations is to monitor, process, and publish water quality/quantity data for assessment and management of water resources in the area, as well as to provide an early warning of any potential or emerging water issues, such that mitigative measures can be implemented in a timely manner.
- ENVC in partnership with Environment Canada (EC), and in consultation with TSMC, conducted two reconnaissance survey trips to Elross Lake to select two sites for station installation. The first reconnaissance trip took place on June 4, 2011, at which time a site was selected along Goodream Creek. A second site was selected along Elross Creek during a second reconnaissance trip on July 16, 2011.
- The installation of both stations was completed on October 16, 2011. Due to the timing of installation, only water quantity instrumentation was installed. Water quality instrumentation is scheduled for deployment in the spring of 2012, when stream conditions are ice free.
- The official name of each station is ELROSS CREEK BELOW PINETTE LAKE INFLOW and GOODREAM CREEK 2KM NORTHWEST OF TIMMINS 6, hereafter referred to as the *Elross Creek Station* and the *Goodream Creek Station*, respectively.
- Table 1 lists the geographic coordinates of each station, including the location of the water quality instrument, gauge house, and helicopter pad.
- Figure 1 shows the location of each station in relation to the town of Schefferville.
- Station sites were selected to monitor all surface water outflows from the Elross Lake mining site. The Elross Creek Station is situated downstream of the Timmins 1 pit, and downstream of Pinette Lake. The Goodream Creek Station will serve to monitor potential impacts from groundwater flowing from Timmins 6 pit into the surface water of Goodream Creek.

Table 1. Geographic coordinates of the Elross Creek Station and Goodream Creek Station components.

	Elross Creek Station		Goodream Creek Station	
	Latitude	Longitude	Latitude	Longitude
Instrument	54.877757	-67.099728	54.917549	-67.124027
Gauge house	54.877698	-67.099848	54.917564	-67.123939
Helicopter pad	54.877604	-67.100014	54.917699	-67.123763

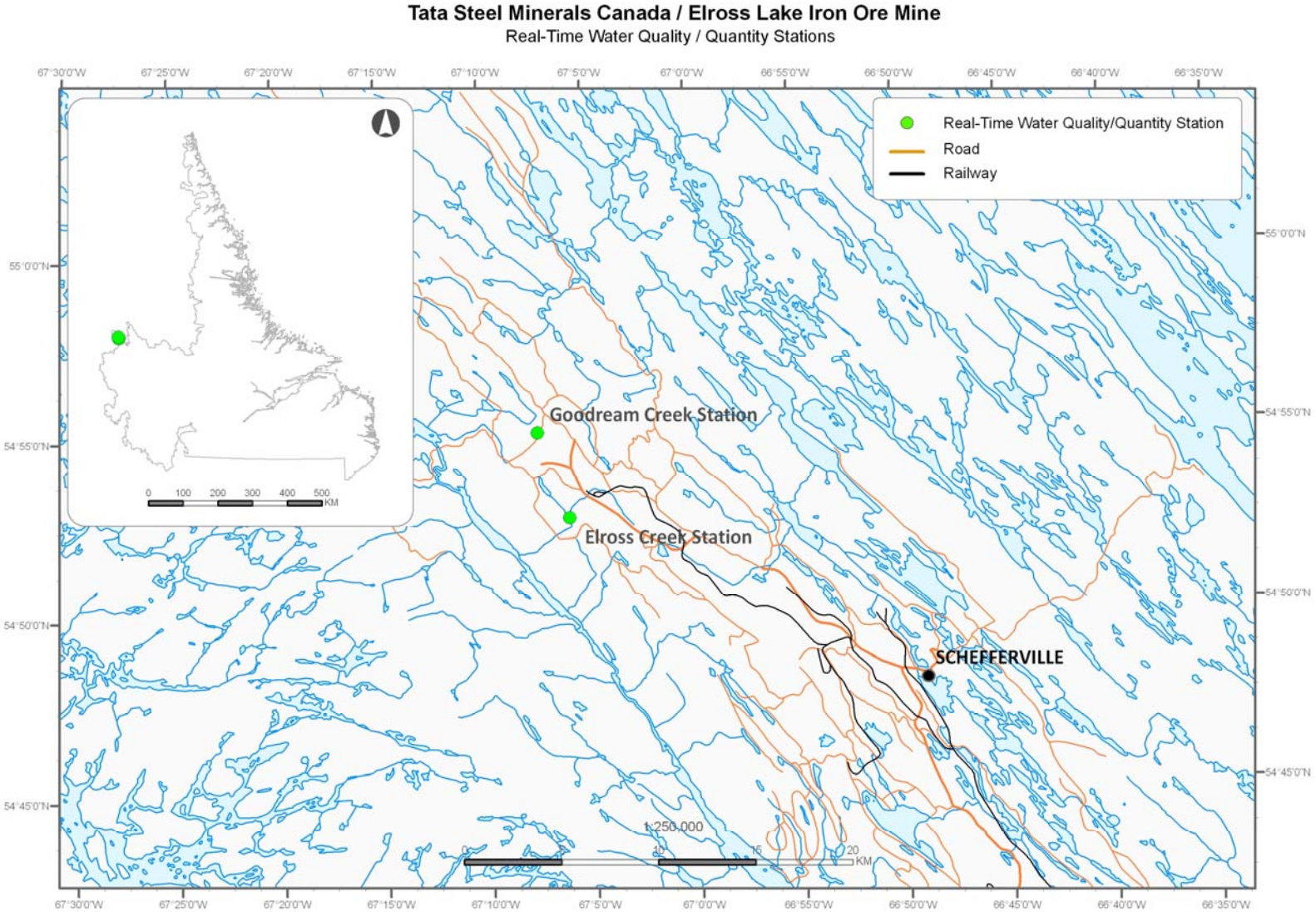

Figure 1. Map of real-time water quality/quantity stations in the vicinity of Elross Lake Iron Ore Mine in Western Labrador.

- Due to transmission issues, the Goodream Creek Station stopped transmitting real-time data to the provincial government website (http://www.env.gov.nl.ca/env/waterres/rti/stations.html) from October 29, 2011 to March 19, 2012 (Figure 2). Transmission problems are common during the first year of deployment. Fortunately, all stage records are being logged on-site.
- The Elross Creek Station has been recording and transmitting stage data since October 16, 2011, with no issues (Figure 3).

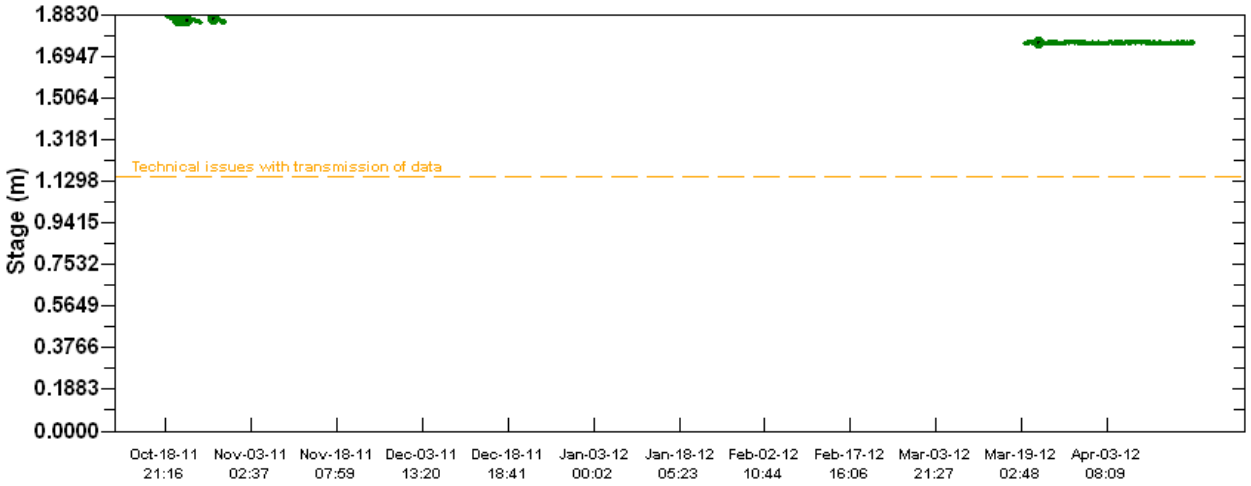

Figure 2. Stage values recorded at the Goodream Creek Station from October 18, 2011, to April 18, 2012. Due to transmission issues, the station stopped transmitting real-time data to the provincial government website from October 29, 2011 to March 19, 2012.

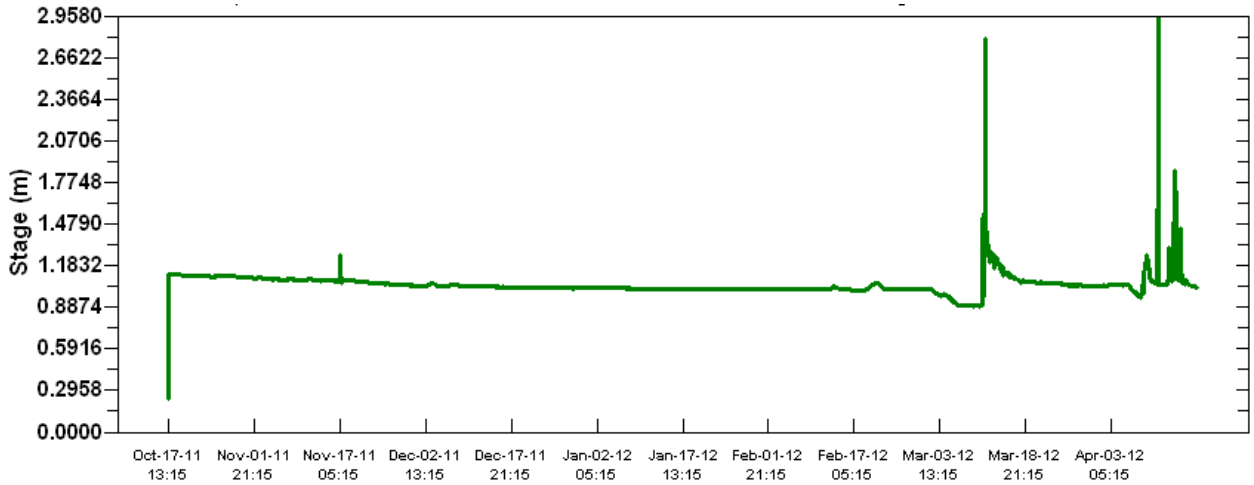

Figure 3. Stage values recorded at the Elross Creek Station from October 17, 2011, to April 18, 2012.

Path Forward

- ENVC staff will deploy RTWQ instruments at Elross Creek Station and Goodream Creek Station in the spring of 2012, when ice conditions allow, and perform regular site visits throughout the 2012 deployment season, for calibration and maintenance of the instruments.
- If necessary, deployment techniques will be evaluated and adapted to each site, ensuring secure and suitable conditions for RTWQ monitoring.
- ENVC staff will update TSMC staff on any changes to processes and procedures with handling, maintaining and calibrating the real-time instruments.
- EC staff will perform regular site visits to ensure water quantity instrumentation is correctly calibrated and providing accurate measurements.
- TSMC will be informed of data trends and any significant water quality events in the form of email and/or monthly deployment reports, when the deployment season begins. TSMC will also receive an annual report, summarizing the events of the deployment season.
- ENVC will begin development of models using RTWQ monitoring data and grab sample data to estimate a variety of additional water quality parameters (e.g., TSS and major ions).
- ENVC will continue to work on its Automatic Data Retrieval System, to incorporate new capabilities in data management and data display.
- ENVC will be active in creating new value added products using the RTWQ data and water quality indices.
- Open communication will continue to be maintained between ENVC, EC, and TSMC employees, in order to respond to emerging water quality/quantity issues on a proactive basis.