



Date: April 20, 2016

File: PE-105017

To: Red Chris Monitoring Committee

Re: Scope of Work for Third Party Environmental Monitor

Background

Red Chris Development Corporation (RCDC) was issued a permit authorizing discharge of effluent from the North Reclaim Dam by the BC Ministry of Environment (MOE) on June 12, 2015, under provisions of the *Environmental Management Act*. Section 2.11 of the permit requires the RCDC to retain a third party environmental monitor for a minimum period of two years from commencement of milling operations, and specifies the scope of the environmental monitor program and reporting are to be established by MOE in consultation with the Red Chris Monitoring Committee (RCMC). This document provides a scope of work for the program and incorporates RCMC input. Wording of relevant permit clauses is appended for reference.

Scope of Work

The third party environmental monitor program will consist of a desktop review of relevant reports and data, a site visit, and reporting to the RCMC. The purpose of the site visit and desktop review will be compliance verification and an audit of receiving environment data. The site visit is required by July 31st and the final report is required no later than August 30th, as described in section 4.0. Activities specific to the Scope of Work are detailed below.

1.0) Review of Permit Requirements

All requirements of effluent permit PE-105017 will be reviewed to assess whether RCDC is meeting requirements and to report non-compliances. This includes but is not limited to:

- 1.1 Observation of all authorized works
- 1.2 Comparison of discharge data to permit limits, including a review of all discharge data contained in applicable Annual Report.
- 1.3 Comparison of discharge and mine site sampling and analytical schedules with those specified in the approved surface water monitoring program specified in section 5.1 of the permit. If there was no approved plan at the time the monitoring was conducted, RCDC's 2015 draft "Surface and Groundwater Monitoring and Management Plan for Red Chris Mine" should be referred to.
- 1.4 Categorization of each permit clause into one of the following categories: meeting requirements, non-compliance, not determined, or not applicable. Justification must be provided for categorization of each clause.

- 1.5 Assessment of whether operations are conforming to plans required in section 3 of the permit, including:
- s.3.1 - Water Management Plan
 - s.3.2 - Annual Discharge Plan
 - s.3.3 - Erosion and Sediment Control Plan
 - s.3.5 - Flocculant Management Plan
 - s.3.7 - Explosive and Nitrogen Management Plan
 - s.3.9 - Contingency and Mitigation Measures Plan

In addition, adherence to the Ore and Waste Rock Material Characterization and Management Plan required in Section D.1(a) of *Mines Act* Permit M-240 will also be assessed.

2.0) Receiving Environment Audit

Receiving environment monitoring required at the mine site is described in various monitoring plans. These plans are required to be developed by RCDC in the following permit sections:

- s.5.1 - Surface water
- s.5.2 - Groundwater
- s.5.9 and 5.10- Aquatic effects
- s.4.3 - Selenium studies
- s.5.11 - Lakes Monitoring (via letter amendment)

Reports and/or data related to the above listed monitoring plans include but may not be limited to:

- RCDC Annual Report required in permit section 6.4
- Data required to be reported monthly as per permit section 6.3
- Aquatic Effects Monitoring Program Report required in permit section 5.9

The receiving environment audit is specific to monitoring conducted in the preceding calendar year and will include:

- 2.1 Review of the monitoring results in the reports and data sources listed above as well as any other records/reports related to the monitoring plans, for the following purposes:
- 2.1.1 Assessment of RCDC's conformance with the sampling and analytical schedules detailed in the monitoring plans. Approved versions of these plans should be referred to for the required schedules. If there was no approved plan at the time the monitoring was conducted, the relevant draft plan should be referred to.
 - 2.1.2 Comparison of data to site performance objectives referenced in permit section 4.1, as well as BC Water Quality Guidelines, including an assessment of the appropriateness of RCDC's comparisons in the reports and data submissions reviewed.

3.0) Quality Control

The following quality control activities will be conducted by the Monitor:

- 3.1 Water quality sampling conducted by RCDC will be observed at sample locations located within the mine-site, at permitted discharge point(s) and at receiving environment sites for assessment of compliance with permit sections 5.5 and 5.8 (Sampling Procedures and Quality Assurance, respectively).
- 3.2 During the sampling event observed by the Monitor, the Monitor will keep a record of the number and type of QA/QC samples collected. Other procedures such as equipment calibration procedures, sample processing and preservation, hold time adherence, and sample requisition preparation will also be evaluated.
- 3.3 Data management will be reviewed by the Monitor including data QA/QC procedures.
- 3.4 Procedures used to verify accuracy of data transcription will be reviewed by the Monitor. The Monitor will randomly select one lab report per month covering the review period and compare the data to the corresponding analytical results reported by RCDC. In addition, the Monitor may also check for transcription errors if he or she identifies any unusual results during the Receiving Environment Audit.
- 3.5 The Monitor will evaluate the adequacy of the monitoring and data management QA/QC procedures described in this section in terms of sample and data integrity.

4.0) Communication and Reporting

The Monitor will meet with the RCMC in advance of the on-site and desktop evaluation, to review the scope of work, discuss expectations and clarify any remaining items. This initial meeting may be held by conference call. At this time, the Monitor will verify the monitoring data review period, the date of the site visit and the anticipated date of submission of the written report.

The written report is required within 30 days following the end of the month of the site visit. The site visit is required by July 31st, therefore the Monitor's report is required no later than August 30th. The report will contain the following:

- 4.1 An overview of the environmental monitor scope of work;
- 4.2 A detailed synopsis of the on-site and desk top evaluations of all compliance assessment, receiving environment audit, and quality control activities listed above;
- 4.4 A photographic record of the site visit; and
- 4.5 Conclusions and recommendations to the RCMC

5.0) Exclusions from Scope of Work

Assessment of adequacy of the design of plans and monitoring programs required in sections 3 to 5 of the effluent permit is not within this scope of work.

6.0) Credentials and Selection Criteria for Third Party Environmental Monitor

The Monitor may be one or people, and will be selected and retained by RCDC. RCDC will ensure the Monitor is acceptable to the RCMC prior to initiation of a contract. The following selection criteria apply:

Third party

- The monitor must be independent, meaning not otherwise employed by RCDC or Imperial Metals

Education and expertise:

- The Monitor must be a Qualified Professional, defined as:
An applied scientist or technologist specializing in a particular applied science or technology, including agrology, biology, chemistry, engineering, geology or hydrogeology, who:
 - (a) is registered in British Columbia with the professional organization responsible for his or her area of expertise, acting under that professional association's code of ethics and subject to disciplinary action by that association, and
 - (b) through suitable education, experience, accreditation and knowledge, may be reasonably relied on to provide advice within his or her area of expertise as it relates to this scope of work

Job-specific skills and knowledge:

- Extensive working knowledge of:
 - Waste management (effluent discharges) at open pit mine sites
 - EMA permits
 - BC Water Quality Guidelines
 - Receiving environment assessments
 - Environmental sampling
 - Data management

Appendix – Permit PE-105017 clauses referencing a Third Party Environmental Monitor

2.11 Third Party Environmental Monitor

The Permittee must implement a third party environmental monitor program using a qualified environmental monitor to ensure implementation of the terms and conditions of the Permit. The environmental monitor program must include but not be limited to one site visit per year scheduled approximately 4 months after the submission of the Annual Report required in Section 6.4, and must include the review of the Annual Report and associated monitoring results. The environmental monitor will report once per year to the RCMC in writing as per Section 6.7. The third party qualified environmental monitor, the scope of the environmental monitor program and the reporting requirements are to be established by MOE in consultation with RCMC.

The third party environmental monitor program is to be implemented for a minimum period of two years from commencement of milling operations. The requirements in this Section, including extension of the initial two year period, may be modified by the Director, based on recommendations from the RCMC as well as any other information obtained by Environmental Protection in connection with the discharges.

6.7 Third Party Environmental Monitor Reporting

The Permittee must ensure the third party qualified environmental monitor responsible, as per Section 2.11, submits a written evaluation report, in a format acceptable to the Director within 30 days of the end of the month in which the evaluation exercise occurred.

The report must include, but not be limited to, the following:

- 3.1 An overview of the environmental monitor scope of work;
- 3.2 An evaluation of compliance with the relevant requirements of the Permit within the scope of work of the environmental monitor;
- 3.3 Conclusions and recommendations to the RCMC.