Appendices

Appendix A
Community Liaison Committee Draft Terms of Reference

Terms of Reference (ToR) for the Community Liaison Committee (CLC)

Moose River Consolidated (MRC) Project

Draft for Discussion at the First CLC Meeting of the Whole (October 2016)

1.0 PURPOSE

1.1 The purpose of the Community Liaison Committee (CLC) is to allow a respectful and transparent exchange of information between Atlantic Gold (the "Proponent") and the residents of local communities and those in adjacent areas such as the Musquodoboit Valley and Eastern Shore and those representing nearest Mi'kmaq communities to the Moose River Consolidated (MRC) Project (the "Project").

1.2 As such, the CLC is to:

- Provide avenues for community input to the Proponent by two-way sharing of information in a transparent forum on Project matters regarding approvals and permits or operations that have or are perceived to have environmental, social or economic impacts;
- Support improved mechanisms and content of Project information sharing by the Proponent to interested individuals in the community; and,
- Provide a voice to those in the community who have concerns, suggestions or questions.

1.3 The CLC is established to facilitate discussion and sharing of information in an equitable forum between the Community and the Proponent on matters regarding Project design, permitting, site preparation, operation, and decommissioning and reclamation activities. Recommendations made to the Proponent by the CLC are formally considered and responded to by the Proponent.

1.4 CLCs are used most successfully to facilitate communication between community members and a project proponent when they provide a public forum to present factual information about the development. CLCs are most effective when issues raised by the community are addressed transparently and in a timely fashion.

2.0 MANDATE

2.1 The CLC members serve as an advisory board for the Company by providing a representative cross-section of community opinions, concerns and suggestions on the MRC Project, including the Touquoy Gold Mine and Beaver Dam Gold Mine, as well as the Cochrane Hill gold deposit and the Fifteen Mile Stream gold deposit.

2.2 This Terms of Reference (ToR) meets and exceeds the expectations for a CLC as documented in the Nova Scotia Guide for the Formation and Operation of a Community Liaison Committee (Nova Scotia, 2010) and the existing Project environmental approvals.

2.3 The CLC works collaboratively with the Proponent in an advisory fashion to develop practical plans and procedures to minimize Project impacts to valued environmental and socio-economic components based on scientifically defensible information.

2.4 Topics of discussion related to the Project include but are not limited to environmental monitoring, dispute/complaint resolution, wetlands, compensation plans, mine development, operations and reclamation plans, as well as the Nova Scotia Environment (NSE) plan for procuring conservation lands. Existing and anticipated future approvals indicate specific plans where the CLC must be engaged as part of their development.

2.5 The CLC is not a decision-making forum; yet the Company anticipates insight into perceptions of the community and suggestions on community engagement and potential mitigative measures for the Project.

2.6 At its foundation, the CLC provides a conduit for dialogue; many residents may not be comfortable to hold discussions with developers, so the CLC provides a more approachable mechanism. To facilitate this mandate, an atmosphere of respect is to be maintained within the CLC to allow diverse views to be presented. Further, members of the CLC are accountable to the community that is represented.

3.0 MEMBERSHIP

3.1 The CLC membership is structured to provide a balance in terms of interests in the Project, location relative to the Project, and perspectives on the Project, as well as demographics and culture.

3.2 While the CLC is a voluntary position, the Proponent will reimburse reasonable expenses (travel, etc.) based on an agreed standard quarterly stipend per member. The amount will be reviewed annually.

3.3 The criteria for selection is based on Nova Scotia Guide (2010) and is a balance of members (as a minimum of six but limited to ten) who reside in the geographic area of the Project and include representation from the Mi'kmaq of Nova Scotia. Specifically, this includes:

- Balanced geographic membership from local communities, such as Mooseland, Middle Musquodoboit, Upper Musquodoboit, Sheet Harbour, Tangier and Musquodoboit Harbour; and
- One member each from the two closest Mi'kmaq communities, Millbrook and Sipekne'katik First Nations, as appointed by Chief and Council of each community.

3.4 Membership is reviewed annually as part of a regular CLC meeting. Resignations are to be received in writing. The up-to-date CLC membership is shared with NSE.

3.5 To ensure balance but also necessary transparency, new members are recruited annually based on advice of the existing CLC members via the following:

- Advertise via the community engagement activities (e.g., community meetings, website, etc.);
- Extend direct invitation to specific stakeholder groups or the Mi'kmaq of Nova Scotia;
- Solicit recommendations from elected officials and other community leaders, as well as existing CLC members;
- Allow at minimum a two-week nomination period; and
- Review expressions of interest by existing CLC members with new appointments subject to approval of the Company.

4.0 ROLES AND RESPONSIBILITIES

Chair

4.1 At the formation of the CLC, an interim chair may be a representative of the Company responsible for environmental management and community engagement. At the discretion of the CLC members, a Chair is to be elected from within the CLC membership by a ballot vote of members during a regular meeting. The Company representative is to continue to support the role of the Chair as requested by the elected Chair.

4.2 The role and responsibilities of the Chair include:

- Ensuring that the CLC members are provided with necessary information and technical support to assist them in their role;
- Facilitating discussion such that there is balance within members' perspectives and that individual members are not either unduly interrupted nor dominate discussion;
- Allowing constructive and thorough discussion while ensuring that agreed upon agenda and schedule are followed; and,
- Maintaining the structure of the CLC as outlined in the ToR, including but not limited to, procedural voting aspects and annual review of the ToR.

Members

4.3 As individual members of the CLC are representatives of their community, the members are responsible to both share perspectives of their community with the CLC and convey factual information to interested members of their community. As such, each CLC member is to participate in discussions, provide input and ideas from their perspective, and actively listen to other points of view. Only with this contribution from each member can the CLC's mandate be achieved.

4.4 The role and responsibilities of the members include:

- Signing the CLC Member Acceptance of the ToR once it is finalized as agreed by majority vote of the CLC;
- Committing to at least one year of participation as an active member of the CLC;

- Working to fulfill the purpose and mandate of the CLC as per this ToR, including conducting themselves with respect and accountability as a CLC member;
- Attending CLC meetings in a regular and timely manner as per the agreed upon schedule with understanding that resignation is required after two consecutive unexplained absences;
- Allowing name, email and telephone number to be published as a CLC member;
- Completing appropriate review of meeting minutes and Project information, including the engagement materials and mitigation measures, to the best of the individual's abilities;
- Listening to other members of the CLC and information presented by the Company during CLC meetings;
- Identifying Project-related concerns of the community or group that the individual member represents;
- Providing constructive comments on the mitigative measures proposed by the Company; and
- Assisting the Company in informing the community and other organizations on items related to the Project that are of interest or concern to the stakeholders and the Mi'kmaq of Nova Scotia.

Company

4.5 There is a dual role and responsibility of the Company; that is, the Company will both support the CLC administratively, financially and technically while respectfully considering the perspectives and opinions shared by the CLC members.

4.6 The roles and responsibilities of the Company include:

- Attending the CLC meetings and listening carefully with due consideration the concerns and suggestions brought forward by the CLC members;
- Keeping the CLC members up-to-date on the Project, including sharing documentation in a timely manner to allow members to review prior to next meeting;
- Distributing the agreed upon agenda, ensuring that notes are taken of the meetings, and posting approved agenda and notes on the Project website;
- Supporting the CLC as appropriate with administrative, technical or financial requirements of the CLC as the Company deems appropriate; and
- Providing updates to the CLC on timely responses and/or actions subsequent to concerns brought forth by the CLC.

Guests

4.7 Guest speakers and attendees, e.g. from local non-governmental organizations, may be part of some CLC meeting. Guests are only to attend the meetings where approved by the CLC and as appropriate given the agreed agenda items. Guests may also include government representatives.

4.8 The roles and responsibilities of CLC guests include:

- Respecting the mandate of the CLC and the role of the Chair, members, and the Company; and
- Fulfilling the role as agreed with the CLC Chair in terms of receiving information on the Project and/or providing advice to assist the CLC in meeting its mandate.

5.0 STRUCTURE

Meeting Format and Frequency

5.1 The first agenda will be proposed by the Company and consists of introductions of the members and the Company, Project update and review and comment upon the draft ToR. The agenda for each subsequent meeting will be set by the CLC with the Chair asking each member in turn if they have specific items to include in the next agenda. In order to keep meetings to a reasonable length of two hours, the Chair may elect to move subsequent items to the next scheduled meeting.

5.2 Standard agenda items will include:

- Review and approval of past meeting minutes and addition of items to agenda;
- Project update by the Company;
- Discussion of CLC comments or concerns;
- Other agenda items as appropriate, including topic(s) of focus and invited guests if appropriate; and
- Determination of next meeting date and agenda for next meeting.

5.3 Meetings will be run in a roundtable format as led by the Chair who will start with review of past minutes and call for new items on proposed agenda. Meeting frequency is proposed as quarterly; however, depending on items for discussion, meetings may be held more frequently. The date of next meeting will be confirmed by the Chair and other members at conclusion of each meeting based on annual schedule.

5.4 While most input of the CLC is individual opinion and perspective for consideration of the Company, voting will be used for several procedural aspects. These include, but are not limited to: finalizing the ToR; determining timing of next meeting if more frequent than quarterly; and electing the Chair. With the exception of electing the chair, each member will vote with a show of hands as facilitated by the Chair or delegate. Private ballot voting will be used to elect the Chair.

Records

5.5 Records relating to the CLC include: the final ToR; the list of current CLC members; the meeting agendas and minutes; and Project specific information. Publishing these records for the community and other interested stakeholders and the Mi'kmaq of Nova Scotia to review is important for transparency. This facilitates information sharing back and forth between the community and Company; recording CLC meetings and sharing minutes, as well as supporting documentation, is an important part of fulfilling the CLC's mandate.

5.6 Modes of publishing will be determined by the Company; the CLC can provide advice on best modes of communication depending on the record. These can include any of the following: newspaper ads; posters; newsletters; use of local government; website; social media; and an email distribution list. Ideally a combination of modern and traditional publishing is used.

Role of the Chair

5.7 As laid out within the ToR, the Chair (or designate) maintains structure and functionality of the CLC meetings. While the Chair is a member of the CLC, (s)he only votes on procedural matters where a tie has formed. The Chair limits discussion to items on the agenda and keeps on schedule while ensuring that each member has contributed as appropriate. The Chair liaises with the Company to ensure that appropriate support is provided to the CLC members.

5.8 It is proposed that the Chair be elected from within the CLC membership by ballot vote at the third CLC meeting. The term of the Chair is annual.

Support of the CLC

5.9 Necessary technical, financial and administrative support to facilitate a functioning CLC will be provided by the Company at the discretion of the Company. Through the Chair, the CLC members may request additional support of the Company as appropriate to facilitate the mandate of the CLC; this may include presentations by specialists to assist the CLC members in understanding technical documentation.

5.10 A maximum of two weeks after a meeting, the Company will distribute draft meeting minutes and the proposed agenda for the next meeting to CLC members. The Company will also distribute Project specific information in a timely fashion to allow suitable review of the material by CLC members before the next meeting.

Rules of Order

5.11 Where members of the CLC are not able to attend an upcoming meeting, (s)he will email, call or visit the Chair at least 24hours prior to the meeting time. Failure to do so for two consecutive meetings will result in automatic resignation from the CLC; the Chair will send a letter accordingly. Where another nomination exists for that geographical area, stakeholder group or Mi'kmaq community, a new member will be selected; otherwise, the position must be advertised.

5.12 Typically, the CLC meetings are limited to members who are nominated to represent the community. Guests may be allowed at the CLC meetings at the discretion of the Chair where a specific justification exists pertinent to the meeting agenda. In this case, the Chair will allow comments or questions from observers pertaining to an agenda item after the CLC comments or questions have been addressed.

5.13 Quorum will consist of five members of the CLC plus attendance of at least one Company representative. Quorum is required for voting matters only.

5.14 Each member of the CLC, the Company representatives, any invited third parties and observers must conduct themselves in a respectful manner. The Chair has the right to exclude any party who is disrupting the CLC meeting.

Review of Terms of Reference

5.15 As its first matter of business, the CLC will review the draft ToR and provide suggestions to finalize this document. The Company will note the proposed changes and attempt to address any voiced concerns via edits. It is the goal that at the subsequent meeting, the CLC will approve the agreed upon final version of the ToR via a majority vote. Accordingly, each member would sign and date the CLC Member Acceptance (Attachment A). Alternatively, subsequent amendments may be suggested if the majority does not support the revised ToR; in this case, the Company will make a second round of edits based on voiced concerns and submit to members for review and vote at the subsequent meeting.

5.16 This ToR will be reviewed and amended by the CLC annually. This is important to ensure that the CLC is well supported to fulfill its purpose and mandate. It is expected that as the Project progresses through various stages that the ToR will be amended accordingly to ensure an effective CLC formation and structure.

Attachment A CLC Member Acceptance

I have read, understand and agree to the Terms of Reference for the Community Liaison Committee of the Moose River Consolidated Project by Atlantic Gold as noted in this document (*date*):

_____
Name of CLC Member (printed)

_____
Signature of CLC Member

_____
Date

Appendix B
Summary of Stakeholder and Mi'kmaq Engagement

Summary of Stakeholder and Mi'kmaq Engagement as Completed for the Project as of May 2017

Beaver Dam Mine Project Environmental Impact Statement
Atlantic Gold Corporation

The following table summarizes the main stakeholder and Mi'kmaq engagement activities conducted by Atlantic Gold for this Project to date since commencement of the federal environmental assessment (EA) process in December 2015. This includes the organization engaged (community group, regulatory agency, Mi'kmaq group, etc.), the date, means of engagement and a summary of key issues if any and topics discussed. Atlantic Gold will continue its engagement over the lifetime of the Project as described in the EIS Sections 3 and 4.

Beyond the summary below of key engagement activities (calls emails, meetings, presentations, site visits, etc.), Atlantic Gold has maintained a detailed tracking table recording all modes of communication associated with the Moose River Consolidated (MRC) Project and notes from each, including attendees, specific comments and action items. The summary below does not include each email or telephone call but includes those where material information / input shared. The Summary below includes those engagement activities where the Beaver Dam Mine Project was a key focus; many additional meetings occurred specific to the Touquoy Gold Project, e.g., with Nova Scotia Environment (NSE) and Department of Natural Resources (DNR), as part of planning and permitting for construction in 2016 and operation in 2017. Additional details can be provided to regulators upon request.

Organization	Date	Means	Key Issues
Canadian Environmental Assessment Agency (CEA Agency)	January 22, 2016	Meeting	Discussed Final Guidelines and process for federal and provincial EAs, as well as planned regulatory workshop
Community Liaison Committee (CLC)	February 25, 2016	Meeting	Updated CLC members on MRC Project, including Beaver Dam Mine Project ongoing EA and planned open houses in spring 2016
Office of Aboriginal Affairs (OAA)	February 26, 2016	Meeting	Updated OAA staff on Atlantic Gold's projects, including Beaver Dam EA, and discussed engagement with the Mi'kmaq
Kwilmu'kq Maw-Klusuaqn Negotiation Office (KMKNO)	February 26, 2016	Meeting	Update on MRC Project and review of draft Mutual Benefits Agreement (MBA) with KMKNO Benefits Officer
KMKNO	March 2, 2016	Meeting	Review progress on draft MBA and discuss opportunities with KMKNO staff and lead Benefits Chief
Sipekne'katik First Nation	March 7, 2016	Meeting	Update on MRC Project, including Beaver Dam EA and review engagement opportunities with staff
CEA Agency / NSE EA Branch	April 5, 2016	Meeting	Planning for regulatory workshop and update on Project EA, including baseline data collection and engagement
KMKNO	April 6, 2016	Meeting	Progress on draft MBA with KMKNO staff and lead Benefits Chief
KMKNO	April 6, 2016	Meeting	Review of MRC Project and update on key issues for Touquoy and Beaver Dam including planning information sharing
OAA	April 20, 2016	Meeting	Update on MRC Project and engagement with KMKNO and Sipekne'katik First Nation

Organization	Date	Means	Key Issues
Sipekne'katik First Nation	April 21, 2016	Presentation	Formal presentation to Sipekne'katik Chief and Council on MRC Project including Beaver Dam and planned engagement with questions on potential effects including water and flora and fauna
KMKNO and Millbrook First Nation	April 22, 2016	Meeting	Discussion of proposed transportation of ore from Beaver Dam mine site to Touquoy for processing as part of the Project, including review of two options where one avoids passing Beaver Lake
Acadia First Nation	April 29, 2016	Email	Update on MRC Project and ongoing Mi'kmaq engagement, sharing information on open houses in May, and offer to further engage
Annapolis Valley First Nation	April 29, 2016	Email	Update on MRC Project and ongoing Mi'kmaq engagement, sharing information on open houses in May, and offer to further engage
Bear River First Nation	April 29, 2016	Email	Update on MRC Project and ongoing Mi'kmaq engagement, sharing information on open houses in May, and offer to further engage
Chapel Island First Nation	April 29, 2016	Email	Update on MRC Project and ongoing Mi'kmaq engagement, sharing information on open houses in May, and offer to further engage
Eskasoni First Nation	April 29, 2016	Email	Update on MRC Project and ongoing Mi'kmaq engagement, sharing information on open houses in May, and offer to further engage
Glooscap First Nation	April 29, 2016	Email	Update on MRC Project and ongoing Mi'kmaq engagement, sharing information on open houses in May, and offer to further engage
Membertou First Nation	April 29, 2016	Email	Update on MRC Project and ongoing Mi'kmaq engagement, sharing information on open houses in May, and offer to further engage
Paq'tnkek (Afton) First Nation	April 29, 2016	Email	Update on MRC Project and ongoing Mi'kmaq engagement, sharing information on open houses in May, and offer to further engage
Pictou Landing First Nation	April 29, 2016	Email	Update on MRC Project and ongoing Mi'kmaq engagement, sharing information on open houses in May, and offer to further engage
Wagmatcook First Nation	April 29, 2016	Email	Update on MRC Project and ongoing Mi'kmaq engagement, sharing information on open houses in May, and offer to further engage
We'koqma'q First Nation	April 29, 2016	Email	Update on MRC Project and ongoing Mi'kmaq engagement, sharing information on open houses in May, and offer to further engage
Public notices	April / May 2016	Advertisements	Advertisements in local community (TownCryer, Eastern Shore Cooperator, Guysborough Journal) and postings in community boards in nearby communities to advertise open houses and update community on MRC Project, including Beaver Dam EA
CLC	May 5, 2016	Meeting	Review of planned construction at Touquoy and Beaver Dam EA process plus overview of community open houses
Millbrook First Nation	May 12, 2016	Presentation	Formal presentation to Millbrook Chief and Council on MRC Project including Beaver Dam and planned engagement with questions on potential effects and opportunities associated with Beaver Dam, including trucking and fish

Organization	Date	Means	Key Issues
Federal and provincial regulators	May 13, 2016	Workshop	Half-day workshop for regulators on the Beaver Dam Mine Project including review of baseline data collection and key potential interactions with environment
Millbrook First Nation	May 16, 2016	Open House	Community open house from 3-8pm held within Millbrook First Nation with information panels and one-on-one discussions; comments focused on employment opportunities and potential effects, including accidents and malfunctions and trucking of ore (16 attendees)
Sipekne'katik First Nation	May 17, 2016	Open House	Community open house from 3-8pm held within Sipekne'katik First Nation with information panels and one-on-one discussions; comments focused on employment opportunities and potential effects, including potential impact to water quality and fish habitat (16 attendees)
Middle Musquodoboit	May 18, 2016	Open House	Public open house from 3-8pm held at Natural Resources Education Centre with information panels and one-on-one discussions; comments focused on employment opportunities and potential effects, including effects on wetlands and fish habitat (61 attendees)
Sheet Harbour	May 19, 2016	Open House	Public open house from 3-8pm held at Sheet Harbour Lions Club with information panels and one-on-one discussions; comments focused on employment opportunities and potential effects, including accidents and malfunctions, loss of habitat and trucking of ore (33 attendees)
Transportation Infrastructure Renewal	June 2, 2016	Meeting	Discussion on road network including Beaver Dam proposed haul routes and potential alternative of crossing Hwy 224
Millbrook First Nation	June 29, 2016	Call	Discussion of potential short- and long-term economic opportunities with Employment Officer
Mi'kmaw Conservation Group (MCG)	July 12, 2016	Call	Review of opportunities for environmental monitoring including capacity building with MCG staff for MRC Project
Sipekne'katik First Nation	August 9, 2016	Call	Discussion of potential short- and long-term economic opportunities with Employment Officer
Sheet Harbour Chamber of Commerce	September 7, 2016	Presentation	Overview of MRC Project, including Beaver Dam for members and invited guests, including discussion of economic opportunities, potential environmental effects and Beaver Dam EA process
Sipekne'katik First Nation	October 6, 2016	Mini-job fair	Sharing of employment opportunities in short and long term with attendees of job fair as advertised by the Sipekne'katik Employment Officer
Sipekne'katik First Nation	October 6, 2016	Meeting	Update on MRC Project and specific discussion on Beaver Dam, including engagement with community once EIS is available and offer to share aspects of EIS prior to registration
KMKNO	October 20, 2016	Meeting	Discussion of engagement with the Assembly and Millbrook and Sipekne'katik First Nations and planning a leadership meeting with Assembly

Organization	Date	Means	Key Issues
CLC	October 29, 2016	Meeting	CLC meeting and site tour at Touquoy Gold Project site in Moose River, including update on MRC Project including the Beaver Dam EA process; members agreed to focused on Beaver Dam meeting and inviting local community groups as guests
CEA Agency / NSE EA Branch	November 1, 2016	Meeting	Update to regulators of EIS development and engagement plus proposed alterative of haul route from Beaver Dam to avoid homes and Beaver Lake; need for information to supplement Project Description
Millbrook First Nation	November 4, 2016	Presentation	Presentation and round table discussion with Chief and Council and key staff regarding the MRC Project, including Beaver Dam; questions included benefits, haul route, potable water at Beaver Lake, and contingency planning
KMKNO	November 7, 2016	Call	Discussion of technical aspects of all projects, including Beaver Dam, e.g., schedule update, haul route, offer to share aspects of EIS prior to registration
KMKNO	November 8, 2016	Meeting	Review of draft MBA and ongoing sharing of opportunities, discussion of approach to finalize MBA and logistics of implementation
Millbrook First Nation	November 10, 2016	Mini-job fair	Sharing of employment opportunities in short and long term with attendees of job fair as advertised by the Millbrook Community Engagement Liaison
Mooseland Community	November 18, 2016	Meeting	Community meeting organized with local RCMP to focus on concern with traffic on Mooseland Road; however, update also provided on MRC Project including Beaver Dam
OAA	November 21, 2016	Meeting	Update on Atlantic Gold's engagement of the Mi'kmaq including Beaver Dam Mine Project
Federal and provincial regulators, KMKNO and Millbrook and Sipekne'katik First Nations	November 29, 2016	Site Tour	Site tour of Beaver Dam mine site, haul route and proposed changes to Touquoy site with federal and provincial regulators and staff of KMKNO and Millbrook and Sipekne'katik First Nations
Millbrook First Nation	December 2, 2016	Mini-job fair	Sharing of employment opportunities in short and long term with attendees of job fair in Sheet Harbour IR as advertised by the Millbrook Community Engagement Liaison
CLC and invited guests	December 3, 2016	Meeting	Meeting with CLC members and invited guests from Eastern Shore Forestry Watch Association and Nova Scotia Salmon Association to focus on the Beaver Dam Mine Project, including presentations from EA Study Team and round table discussion; issues raised included watercourses, fish habitat, water quality, groundwater levels, traffic, recreation and contingency planning
Municipality of the District of Saint Mary's	January 4, 2017	Presentation	Presentation to Warden and Councillors on Atlantic Gold's project development in NS, including Beaver Dam Mine site and upcoming release of EIS
Assembly Benefits Committee Chiefs	February 3, 2017	Presentation	Presentation to five Benefits Committee Chiefs and key staff of KMKNO re: MRC Project and advanced exploration ongoing in terms of short and long term opportunities for benefits to the Mi'kmaq of Nova Scotia

Organization	Date	Means	Key Issues
Millbrook First Nation	February 15, 2017	Email	Update on Beaver Dam EIS submission, sharing of MEKS, and ongoing discussion of best approaches for information sharing to support Millbrook community engagement (to support request for additional information on contingency planning as requested), site visit for Chief and Council and members of Beaver Lake and logistics to provide additional information associated with potential impacts and discuss benefits
Sipekne'katik First Nation	February 15, 2017	Email	Update on Beaver Dam EIS submission, sharing of MEKS, and offer to meet and/or provide more information (date being planned to present to Chief and Council and discussion of community meeting once EIS released)
Eastern Shore Forestry Watch	February 15, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information on Beaver Dam and Touquoy Gold Mine (date being planned to meet as per follow up correspondence)
Nova Scotia Salmon Association	February 15, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information and approach to sharing data (date being planned to meet as per follow up correspondence)
Mi'kmaw Conservation Group (MCG)	March 23, 2017	Call	Initial discussion of opportunities with Touquoy, Beaver Dam and other potential projects for environmental monitoring
Native Council of Nova Scotia	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information (date being planned to meet as per follow up correspondence)
Acadia First Nation	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information
Annapolis Valley First Nation	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information
Bear River First Nation	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information
Chapel Island First Nation	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information
Eskasoni First Nation	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information
Glooscap First Nation	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information
Membertou First Nation	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information
Paq’tnkek (Afton) First Nation	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information

Organization	Date	Means	Key Issues
Pictou Landing First Nation	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information
Wagmatcook First Nation	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information
We'koqma'q First Nation	March 27, 2017	Email	Update on Beaver Dam EIS submission, overall MRC Project update and offer to meet and/or provide more information
Community Liaison Committee (CLC)	April 1, 2017	Meeting	CLC meeting in Moose River, including update on MRC Project including the Beaver Dam EA process, agreement to minor edits to the CLC Terms of Reference, discussion of cyanide transpiration, employment and engagement activities; comment received from Millbrook member re: request for information on contingency planning and reclamation as per prior Chief and Council meeting in Nov 2016
Key staff of MCG and KMKNO	April 6, 2017	Meeting	Review of environmental monitoring and other participation opportunities, such as wetland compensation planning, for MCG to use existing capacity and build future capacity as part of developing the Company's projects, including the Beaver Dam Mine Project.
Key interested staff and councillors from Sipek'nekatik and Millbrook First Nations plus MCG	May 3, 2017	Presentation	Presentation by Atlantic Gold staff on emergency response planning, environmental monitoring and reclamation for Touquoy and Beaver Dam sites, including cyanide transport, handling, monitoring and discharge; specific discussions on management of effluent, cyanide handling, incl Cyanide Code, and effect on local hydrology, e.g., Cameron Flowage water levels due to Beaver Dam pit development.

Beyond May 2017, ongoing engagement is planned to support the federal and provincial EA processes for the Beaver Dam Mine Project, including specific meetings with Mi'kmaq groups and community groups. As part of overall MRC Project engagement strategy, engagement activities will continue and will be responsive to questions and concerns identified of the stakeholders and the Mi'kmaq of Nova Scotia.

Appendix C
Sediment Baseline Analytical Results

Table 1: General Chemistry

		CCME FAL	MMER	WC-2
Sampling Date				**9-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.160
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			12
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.220
Hardness (CaCO3)	mg/L			3.3
Ion Balance (% Difference)	%			15.8
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.0
Colour	TCU			270
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.010
pH	pH	**6.5-9**	**6-9.5**	4.65
Reactive Silica (SiO2)	mg/L			1.7
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			2.3
Turbidity	NTU			0.95
Conductivity	uS/cm			25

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-2
Sampling Date				**9-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		350
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	1.9
Total Barium (Ba)	ug/L			2.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.014
Total Calcium (Ca)	ug/L			780
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		880
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	0.79
Total Magnesium (Mg)	ug/L			320
Total Manganese (Mn)	ug/L			29
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			180
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			4.5
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.3
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-3
Sampling Date				**9-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			8.0
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.170
Hardness (CaCO3)	mg/L			2.8
Ion Balance (% Difference)	%			25.9
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.6
Colour	TCU			220
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			16
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	5.07
Reactive Silica (SiO2)	mg/L			0.85
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.83
Conductivity	uS/cm			18

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-3
Sampling Date				**9-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		320
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	1.2
Total Barium (Ba)	ug/L			2.1
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		<0.010
Total Calcium (Ca)	ug/L			620
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		780
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	0.52
Total Magnesium (Mg)	ug/L			310
Total Manganese (Mn)	ug/L			28
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			170
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			1800
Total Strontium (Sr)	ug/L			4.6
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			3.3
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	6.3

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-7
Sampling Date				**9-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.220
Hardness (CaCO3)	mg/L			2.9
Ion Balance (% Difference)	%			33.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.8
Colour	TCU			230
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			20
Orthophosphate (P)	mg/L			0.010
pH	pH	**6.5-9**	**6-9.5**	4.61
Reactive Silica (SiO2)	mg/L			3.2
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			2.0
Conductivity	uS/cm			28

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-7
Sampling Date				**9-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		440
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			3.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.013
Total Calcium (Ca)	ug/L			540
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.44
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		730
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	0.86
Total Magnesium (Mg)	ug/L			370
Total Manganese (Mn)	ug/L			23
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			190
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2300
Total Strontium (Sr)	ug/L			6.4
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.3
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-8
Sampling Date				**9-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			10
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.220
Hardness (CaCO3)	mg/L			3.9
Ion Balance (% Difference)	%			33.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.8
Colour	TCU			220
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			16
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	5.56
Reactive Silica (SiO2)	mg/L			1.7
Total Suspended Solids	mg/L			7.2
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.83
Conductivity	uS/cm			25

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-8
Sampling Date				**9-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		440
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	2.1
Total Barium (Ba)	ug/L			3.8
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.015
Total Calcium (Ca)	ug/L			900
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.77
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		1000
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	0.52
Total Magnesium (Mg)	ug/L			390
Total Manganese (Mn)	ug/L			29
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	2.1
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			220
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2200
Total Strontium (Sr)	ug/L			6.9
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			6.5
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	13

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-9
Sampling Date				**9-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			9.0
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.220
Hardness (CaCO3)	mg/L			3.6
Ion Balance (% Difference)	%			37.5
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.6
Colour	TCU			120
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050
Total Organic Carbon (C)	mg/L			9.5
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	5.59
Reactive Silica (SiO2)	mg/L			0.68
Total Suspended Solids	mg/L			2.8
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			1.6
Conductivity	uS/cm			20

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-9
Sampling Date				**9-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		360
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			17
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.016
Total Calcium (Ca)	ug/L			700
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.49
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		930
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	0.52
Total Magnesium (Mg)	ug/L			440
Total Manganese (Mn)	ug/L			63
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			530
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2400
Total Strontium (Sr)	ug/L			8.0
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			3.6
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	5.5

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-10
Sampling Date				**9-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			12
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.230
Hardness (CaCO3)	mg/L			3.1
Ion Balance (% Difference)	%			35.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.8
Colour	TCU			270
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.011
pH	pH	**6.5-9**	**6-9.5**	4.67
Reactive Silica (SiO2)	mg/L			3.3
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			1.7
Conductivity	uS/cm			27

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-10
Sampling Date				**9-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		500
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			4.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.022
Total Calcium (Ca)	ug/L			600
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		980
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	0.88
Total Magnesium (Mg)	ug/L			390
Total Manganese (Mn)	ug/L			28
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			230
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2300
Total Strontium (Sr)	ug/L			7.2
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			7.6
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	5.1

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-11	
Sampling Date				**9-Jun-16**	**9-Jun-16**
Calculated Parameters	**Units**				(DUP 4)
Anion Sum	me/L			0.100	0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0
Calculated TDS	mg/L			10	10
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0
Cation Sum	me/L			0.210	0.200
Hardness (CaCO3)	mg/L			3.0	2.9
Ion Balance (% Difference)	%			35.5	29.0
Langelier Index (@ 20C)	N/A			NC	NC
Langelier Index (@ 4C)	N/A			NC	NC
Nitrate (N)	mg/L	**2.935**		<0.050	<0.050
Saturation pH (@ 20C)	N/A			NC	NC
Saturation pH (@ 4C)	N/A			NC	NC
Inorganics					
Total Alkalinity (Total as CaCO3)	mg/L			<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			3.5	3.7
Colour	TCU			220	220
Nitrate + Nitrite	mg/L			<0.050	<0.050
Nitrite (N)	mg/L	**0.06**		<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050	<0.050
Total Organic Carbon (C)	mg/L			16	15
Orthophosphate (P)	mg/L			0.010	0.010
pH	pH	**6.5-9**	**6-9.5**	5.09	4.97
Reactive Silica (SiO2)	mg/L			2.3	2.3
Total Suspended Solids	mg/L			2.8	<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0	<2.0
Turbidity	NTU			1.2	1.6
Conductivity	uS/cm			24	22

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

	Units	CCME FAL	MMER	WC-11	
Sampling Date				**9-Jun-16**	**9-Jun-16**
Metals					(DUP 4)
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		450	430
Total Antimony (Sb)	ug/L			<1.0	<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0	<1.0
Total Barium (Ba)	ug/L			4.0	4.0
Total Beryllium (Be)	ug/L			<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0
Total Boron (B)	ug/L	**1500**		<50	<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.018	0.012
Total Calcium (Ca)	ug/L			580	570
Total Chromium (Cr)	ug/L			<1.0	<1.0
Total Cobalt (Co)	ug/L			<0.40	<0.40
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0	<2.0
Total Iron (Fe)	ug/L	**300**		900	770
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	0.74	0.63
Total Magnesium (Mg)	ug/L			370	360
Total Manganese (Mn)	ug/L			36	35
Total Molybdenum (Mo)	ug/L	**73**		<2.0	<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100
Total Potassium (K)	ug/L			300	280
Total Selenium (Se)	ug/L	**1**		<1.0	<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10	<0.10
Total Sodium (Na)	ug/L			2400	2300
Total Strontium (Sr)	ug/L			7.2	7.1
Total Thallium (Tl)	ug/L	**0.8**		<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0
Total Titanium (Ti)	ug/L			6.3	5.7
Total Uranium (U)	ug/L	**15**		<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-12
Sampling Date				**9-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			13
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.250
Hardness (CaCO3)	mg/L			3.5
Ion Balance (% Difference)	%			38.9
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		0.072
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.5
Colour	TCU			290
Nitrate + Nitrite	mg/L			0.072
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		0.062
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.012
pH	pH	**6.5-9**	**6-9.5**	4.60
Reactive Silica (SiO2)	mg/L			3.9
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.73
Conductivity	uS/cm			28

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-12
Sampling Date				**9-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		510
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			4.0
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.020
Total Calcium (Ca)	ug/L			650
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		1100
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	0.98
Total Magnesium (Mg)	ug/L			470
Total Manganese (Mn)	ug/L			20
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			220
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2500
Total Strontium (Sr)	ug/L			8.0
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			7.3
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-13
Sampling Date				**9-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.0900
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			10
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO3)	mg/L			3.0
Ion Balance (% Difference)	%			40.0
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.3
Colour	TCU			190
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			12
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	5.00
Reactive Silica (SiO2)	mg/L			2.4
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			1.1
Conductivity	uS/cm			22

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

	Units	CCME FAL	MMER	WC-13
Sampling Date				**9-Jun-16**
Metals				
Total Aluminum (Al)	ug/L	**5 / 100**[1]		420
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			4.4
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.016
Total Calcium (Ca)	ug/L			580
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.53
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		830
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	0.70
Total Magnesium (Mg)	ug/L			380
Total Manganese (Mn)	ug/L			54
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			280
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2500
Total Strontium (Sr)	ug/L			7.2
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			5.8
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-14
Sampling Date				**9-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			12
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO3)	mg/L			2.5
Ion Balance (% Difference)	%			31.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.7
Colour	TCU			130
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			9.2
Orthophosphate (P)	mg/L			0.010
pH	pH	**6.5-9**	**6-9.5**	5.19
Reactive Silica (SiO2)	mg/L			3.7
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			1.3
Conductivity	uS/cm			21

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

	Units	CCME FAL	MMER	WC-14
Sampling Date				**9-Jun-16**
Metals				
Total Aluminum (Al)	ug/L	**5 / 100**[1]		340
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			3.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.014
Total Calcium (Ca)	ug/L			490
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			1.2
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		1200
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	<0.50
Total Magnesium (Mg)	ug/L			300
Total Manganese (Mn)	ug/L			100
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			150
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2400
Total Strontium (Sr)	ug/L			6.0
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			5.4
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-15
Sampling Date				**9-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			12
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.200
Hardness (CaCO3)	mg/L			3.2
Ion Balance (% Difference)	%			33.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.7
Colour	TCU			140
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050
Total Organic Carbon (C)	mg/L			13
Orthophosphate (P)	mg/L			0.010
pH	pH	**6.5-9**	**6-9.5**	5.22
Reactive Silica (SiO2)	mg/L			4.2
Total Suspended Solids	mg/L			1.8
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.75
Conductivity	uS/cm			22

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-15
Sampling Date				**9-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		470
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			4.4
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.013
Total Calcium (Ca)	ug/L			720
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.66
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		700
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	<0.50
Total Magnesium (Mg)	ug/L			340
Total Manganese (Mn)	ug/L			41
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			160
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2300
Total Strontium (Sr)	ug/L			7.6
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			6.2
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-16
Sampling Date				**9-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.190
Hardness (CaCO3)	mg/L			3.4
Ion Balance (% Difference)	%			26.7
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.9
Colour	TCU			190
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			17
Orthophosphate (P)	mg/L			0.010
pH	pH	**6.5-9**	**6-9.5**	5.02
Reactive Silica (SiO2)	mg/L			3.5
Total Suspended Solids	mg/L			3.6
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.45
Conductivity	uS/cm			22

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-16
Sampling Date				**9-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		460
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			5.1
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.018
Total Calcium (Ca)	ug/L			760
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.49
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		520
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	<0.50
Total Magnesium (Mg)	ug/L			370
Total Manganese (Mn)	ug/L			31
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			160
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			9.3
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			6.2
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-17	
Sampling Date				**9-Jun-16**	**9-Jun-16**
Calculated Parameters	**Units**				(DUP 3)
Anion Sum	me/L			0.100	0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0
Calculated TDS	mg/L			11	11
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0
Cation Sum	me/L			0.210	0.200
Hardness (CaCO3)	mg/L			3.5	3.3
Ion Balance (% Difference)	%			35.5	33.3
Langelier Index (@ 20C)	N/A			NC	NC
Langelier Index (@ 4C)	N/A			NC	NC
Nitrate (N)	mg/L	**2.935**		<0.050	<0.050
Saturation pH (@ 20C)	N/A			NC	NC
Saturation pH (@ 4C)	N/A			NC	NC
Inorganics					
Total Alkalinity (Total as CaCO3)	mg/L			<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			3.7	3.5
Colour	TCU			200	190
Nitrate + Nitrite	mg/L			<0.050	<0.050
Nitrite (N)	mg/L	**0.06**		<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050	<0.050
Total Organic Carbon (C)	mg/L			16	16
Orthophosphate (P)	mg/L			<0.010	0.010
pH	pH	**6.5-9**	**6-9.5**	5.39	5.83
Reactive Silica (SiO2)	mg/L			3.2	3.2
Total Suspended Solids	mg/L			6.4	2.6
Dissolved Sulphate (SO4)	mg/L			<2.0	<2.0
Turbidity	NTU			0.92	1.2
Conductivity	uS/cm			21	22

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-17	
Sampling Date				9-Jun-16	9-Jun-16
Metals	**Units**				(DUP 3)
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		400	390
Total Antimony (Sb)	ug/L			<1.0	<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0	<1.0
Total Barium (Ba)	ug/L			4.5	4.5
Total Beryllium (Be)	ug/L			<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0
Total Boron (B)	ug/L	**1500**		<50	<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.014	0.012
Total Calcium (Ca)	ug/L			790	760
Total Chromium (Cr)	ug/L			<1.0	<1.0
Total Cobalt (Co)	ug/L			0.63	0.58
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0	<2.0
Total Iron (Fe)	ug/L	**300**		930	850
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	0.53	0.59
Total Magnesium (Mg)	ug/L			360	350
Total Manganese (Mn)	ug/L			46	42
Total Molybdenum (Mo)	ug/L	**73**		<2.0	<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100
Total Potassium (K)	ug/L			180	210
Total Selenium (Se)	ug/L	**1**		<1.0	<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10	<0.10
Total Sodium (Na)	ug/L			2200	2300
Total Strontium (Sr)	ug/L			8.2	7.7
Total Thallium (Tl)	ug/L	**0.8**		<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0
Total Titanium (Ti)	ug/L			6.8	6.6
Total Uranium (U)	ug/L	**15**		<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-23
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			13
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO3)	mg/L			2.7
Ion Balance (% Difference)	%			31.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.0
Colour	TCU			230
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.010
pH	pH	**6.5-9**	**6-9.5**	4.73
Reactive Silica (SiO2)	mg/L			4.6
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.94
Conductivity	uS/cm			28

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-23
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		520
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			3.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.018
Total Calcium (Ca)	ug/L			490
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		570
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	0.77
Total Magnesium (Mg)	ug/L			350
Total Manganese (Mn)	ug/L			30
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			330
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2400
Total Strontium (Sr)	ug/L			5.1
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			9.0
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-24
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.120
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			13
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO3)	mg/L			3.2
Ion Balance (% Difference)	%			27.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		0.062
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.9
Colour	TCU			230
Nitrate + Nitrite	mg/L			0.062
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.010
pH	pH	**6.5-9**	**6-9.5**	4.92
Reactive Silica (SiO2)	mg/L			3.9
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			2.5
Conductivity	uS/cm			24

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-24
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		470
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			4.6
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.020
Total Calcium (Ca)	ug/L			660
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		690
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	0.73
Total Magnesium (Mg)	ug/L			380
Total Manganese (Mn)	ug/L			58
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			180
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2400
Total Strontium (Sr)	ug/L			6.5
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			7.1
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-25
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			13
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.230
Hardness (CaCO3)	mg/L			2.6
Ion Balance (% Difference)	%			35.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.0
Colour	TCU			230
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050
Total Organic Carbon (C)	mg/L			20
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	4.69
Reactive Silica (SiO2)	mg/L			4.3
Total Suspended Solids	mg/L			2.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			2.3
Conductivity	uS/cm			26

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-25
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		740
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			4.6
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.022
Total Calcium (Ca)	ug/L			460
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		750
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	0.91
Total Magnesium (Mg)	ug/L			350
Total Manganese (Mn)	ug/L			31
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			390
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2700
Total Strontium (Sr)	ug/L			5.6
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			12
Total Uranium (U)	ug/L	**15**		0.11
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-26
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.190
Hardness (CaCO3)	mg/L			2.5
Ion Balance (% Difference)	%			26.7
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.1
Colour	TCU			190
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			16
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	4.97
Reactive Silica (SiO2)	mg/L			2.6
Total Suspended Solids	mg/L			2.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			1.1
Conductivity	uS/cm			27

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-26
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		390
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			3.0
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.020
Total Calcium (Ca)	ug/L			460
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		730
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	0.64
Total Magnesium (Mg)	ug/L			330
Total Manganese (Mn)	ug/L			48
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			170
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2200
Total Strontium (Sr)	ug/L			4.7
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			6.1
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-27
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.120
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO3)	mg/L			2.6
Ion Balance (% Difference)	%			27.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.1
Colour	TCU			280
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			20
Orthophosphate (P)	mg/L			0.010
pH	pH	**6.5-9**	**6-9.5**	4.69
Reactive Silica (SiO2)	mg/L			2.9
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.85
Conductivity	uS/cm			28

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-27
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		350
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			3.4
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.019
Total Calcium (Ca)	ug/L			450
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		710
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	0.85
Total Magnesium (Mg)	ug/L			360
Total Manganese (Mn)	ug/L			24
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			210
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2500
Total Strontium (Sr)	ug/L			5.8
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.5
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-28
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			8.0
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.170
Hardness (CaCO3)	mg/L			2.0
Ion Balance (% Difference)	%			21.4
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.9
Colour	TCU			150
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			11
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	5.23
Reactive Silica (SiO2)	mg/L			<0.50
Total Suspended Solids	mg/L			3.2
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			2.6
Conductivity	uS/cm			19

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-28
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		200
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			1.5
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.018
Total Calcium (Ca)	ug/L			350
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		640
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	<0.50
Total Magnesium (Mg)	ug/L			280
Total Manganese (Mn)	ug/L			31
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			320
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2000
Total Strontium (Sr)	ug/L			3.9
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.8
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-29
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			8.0
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.160
Hardness (CaCO3)	mg/L			2.8
Ion Balance (% Difference)	%			23.1
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.6
Colour	TCU			100
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			6.7
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	5.62
Reactive Silica (SiO2)	mg/L			0.97
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.63
Conductivity	uS/cm			18

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-29
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		220
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			2.6
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.019
Total Calcium (Ca)	ug/L			650
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		300
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	<0.50
Total Magnesium (Mg)	ug/L			290
Total Manganese (Mn)	ug/L			41
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			180
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2000
Total Strontium (Sr)	ug/L			5.3
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			2.4
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-30
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			9.0
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.190
Hardness (CaCO3)	mg/L			3.3
Ion Balance (% Difference)	%			31.0
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		0.056
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.3
Colour	TCU			140
Nitrate + Nitrite	mg/L			0.056
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			9.8
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	5.31
Reactive Silica (SiO2)	mg/L			1.1
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			1.3
Conductivity	uS/cm			19

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-30
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		300
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			3.1
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.016
Total Calcium (Ca)	ug/L			790
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		530
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	<0.50
Total Magnesium (Mg)	ug/L			330
Total Manganese (Mn)	ug/L			60
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			180
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			4.6
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.6
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-31
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.0800
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			10
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.200
Hardness (CaCO3)	mg/L			3.5
Ion Balance (% Difference)	%			42.9
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			2.9
Colour	TCU			110
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050
Total Organic Carbon (C)	mg/L			10
Orthophosphate (P)	mg/L			0.011
pH	pH	**6.5-9**	**6-9.5**	5.27
Reactive Silica (SiO2)	mg/L			3.0
Total Suspended Solids	mg/L			6.6
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			1.9
Conductivity	uS/cm			20

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-31
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100[(1)]**		420
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			6.6
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37[(2)]**		0.030
Total Calcium (Ca)	ug/L			720
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4[(3)]**	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		340
Total Lead (Pb)	ug/L	**1 - 7[(4)]**	**400**	0.53
Total Magnesium (Mg)	ug/L			400
Total Manganese (Mn)	ug/L			100
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150[(5)]**	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			120
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2600
Total Strontium (Sr)	ug/L			6.0
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.0
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-41
Sampling Date				**23-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.170
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			19
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO3)	mg/L			2.0
Ion Balance (% Difference)	%			10.5
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		0.58
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.5
Colour	TCU			89
Nitrate + Nitrite	mg/L			0.58
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		0.057
Total Organic Carbon (C)	mg/L			6.4
Orthophosphate (P)	mg/L			0.013
pH	pH	**6.5-9**	**6-9.5**	4.74
Reactive Silica (SiO2)	mg/L			7.8
Total Suspended Solids	mg/L			7.2
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			3.4
Conductivity	uS/cm			37

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-41
Sampling Date				
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		330
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			3.1
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.017
Total Calcium (Ca)	ug/L			380
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		130
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	0.55
Total Magnesium (Mg)	ug/L			250
Total Manganese (Mn)	ug/L			5.3
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			370
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			3200
Total Strontium (Sr)	ug/L			4.3
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			5.9
Total Uranium (U)	ug/L	**15**		0.72
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-42
Sampling Date				
Calculated Parameters	**Units**			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			12
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.190
Hardness (CaCO3)	mg/L			1.9
Ion Balance (% Difference)	%			31.0
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		0.058
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.5
Colour	TCU			140
Nitrate + Nitrite	mg/L			0.058
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		0.19
Total Organic Carbon (C)	mg/L			8.5
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	5.79
Reactive Silica (SiO2)	mg/L			4.6
Total Suspended Solids	mg/L			<2.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.52
Conductivity	uS/cm			24

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-42
Sampling Date				
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100[(1)]**		350
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			3.3
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37[(2)]**		0.015
Total Calcium (Ca)	ug/L			350
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4[(3)]**	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		360
Total Lead (Pb)	ug/L	**1 - 7[(4)]**	**400**	<0.50
Total Magnesium (Mg)	ug/L			250
Total Manganese (Mn)	ug/L			36
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150[(5)]**	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			190
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2700
Total Strontium (Sr)	ug/L			4.1
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.7
Total Uranium (U)	ug/L	**15**		0.21
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-43	
Sampling Date				**8-Jun-16**	**8-Jun-16**
Calculated Parameters	**Units**				(DUP 1)
Anion Sum	me/L			0.120	0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0
Calculated TDS	mg/L			12	11
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0
Cation Sum	me/L			0.300	0.270
Hardness (CaCO3)	mg/L			7.0	6.3
Ion Balance (% Difference)	%			42.9	42.1
Langelier Index (@ 20C)	N/A			NC	NC
Langelier Index (@ 4C)	N/A			NC	NC
Nitrate (N)	mg/L	**2.935**		<0.050	<0.050
Saturation pH (@ 20C)	N/A			NC	NC
Saturation pH (@ 4C)	N/A			NC	NC
Inorganics					
Total Alkalinity (Total as CaCO3)	mg/L			<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			4.1	3.9
Colour	TCU			280	280
Nitrate + Nitrite	mg/L			<0.050	<0.050
Nitrite (N)	mg/L	**0.06**		<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050	<0.050
Total Organic Carbon (C)	mg/L			19	19
Orthophosphate (P)	mg/L			0.011	0.011
pH	pH	**6.5-9**	**6-9.5**	5.13	5.64
Reactive Silica (SiO2)	mg/L			1.2	1.2
Total Suspended Solids	mg/L			7.8	4.4
Dissolved Sulphate (SO4)	mg/L			<2.0	<2.0
Turbidity	NTU			11	13
Conductivity	uS/cm			22	24

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-43	
Sampling Date				**8-Jun-16**	**8-Jun-16**
Metals	**Units**				(DUP 1)
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		1000	820
Total Antimony (Sb)	ug/L			<1.0	<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	3.8	3.0
Total Barium (Ba)	ug/L			10	9.0
Total Beryllium (Be)	ug/L			<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0
Total Boron (B)	ug/L	**1500**		<50	<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.016	0.014
Total Calcium (Ca)	ug/L			1400	1300
Total Chromium (Cr)	ug/L			1.4	<1.0
Total Cobalt (Co)	ug/L			0.69	0.61
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	2.3	2.1
Total Iron (Fe)	ug/L	**300**		1600	1300
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	1.8	1.6
Total Magnesium (Mg)	ug/L			870	750
Total Manganese (Mn)	ug/L			83	75
Total Molybdenum (Mo)	ug/L	**73**		<2.0	<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100
Total Potassium (K)	ug/L			600	460
Total Selenium (Se)	ug/L	**1**		<1.0	<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10	<0.10
Total Sodium (Na)	ug/L			1900	2000
Total Strontium (Sr)	ug/L			7.5	7.0
Total Thallium (Tl)	ug/L	**0.8**		<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0
Total Titanium (Ti)	ug/L			24	19
Total Uranium (U)	ug/L	**15**		<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	6.0	5.5

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-44
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			6.0
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.130
Hardness (CaCO3)	mg/L			1.9
Ion Balance (% Difference)	%			13.0
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.7
Colour	TCU			210
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			15
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	4.97
Reactive Silica (SiO2)	mg/L			<0.50
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.61
Conductivity	uS/cm			26

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-44
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		170
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			1.4
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.016
Total Calcium (Ca)	ug/L			370
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		510
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	<0.50
Total Magnesium (Mg)	ug/L			230
Total Manganese (Mn)	ug/L			31
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			100
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			1400
Total Strontium (Sr)	ug/L			2.5
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			3.7
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-45
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			10
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO3)	mg/L			3.6
Ion Balance (% Difference)	%			31.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.7
Colour	TCU			200
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050
Total Organic Carbon (C)	mg/L			14
Orthophosphate (P)	mg/L			0.010
pH	pH	**6.5-9**	**6-9.5**	5.21
Reactive Silica (SiO2)	mg/L			1.5
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.72
Conductivity	uS/cm			20

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-45
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		310
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	30
Total Barium (Ba)	ug/L			3.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.019
Total Calcium (Ca)	ug/L			880
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.42
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		920
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	0.61
Total Magnesium (Mg)	ug/L			350
Total Manganese (Mn)	ug/L			61
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	5.7
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			190
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			5.0
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.6
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-46
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.240
Hardness (CaCO3)	mg/L			4.5
Ion Balance (% Difference)	%			37.1
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		0.065
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.9
Colour	TCU			190
Nitrate + Nitrite	mg/L			0.065
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050
Total Organic Carbon (C)	mg/L			12
Orthophosphate (P)	mg/L			0.010
pH	pH	**6.5-9**	**6-9.5**	5.59
Reactive Silica (SiO2)	mg/L			2.0
Total Suspended Solids	mg/L			2.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			2.8
Conductivity	uS/cm			22

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-46
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		430
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	4.4
Total Barium (Ba)	ug/L			5.1
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.016
Total Calcium (Ca)	ug/L			1100
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		720
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	0.68
Total Magnesium (Mg)	ug/L			440
Total Manganese (Mn)	ug/L			47
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			280
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2500
Total Strontium (Sr)	ug/L			6.0
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			12
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-47
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			14
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.350
Hardness (CaCO3)	mg/L			7.7
Ion Balance (% Difference)	%			52.2
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		0.17
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.6
Colour	TCU			240
Nitrate + Nitrite	mg/L			0.17
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.011
pH	pH	**6.5-9**	**6-9.5**	5.43
Reactive Silica (SiO2)	mg/L			2.6
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.99
Conductivity	uS/cm			25

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-47
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		810
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	1.9
Total Barium (Ba)	ug/L			9.3
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.030
Total Calcium (Ca)	ug/L			1800
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.89
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		1000
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	1.3
Total Magnesium (Mg)	ug/L			760
Total Manganese (Mn)	ug/L			140
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			260
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			3300
Total Strontium (Sr)	ug/L			10
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			15
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	5.6

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-19
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.230
Hardness (CaCO3)	mg/L			2.8
Ion Balance (% Difference)	%			39.4
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.5
Colour	TCU			130
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			13
Orthophosphate (P)	mg/L			0.010
pH	pH	**6.5-9**	**6-9.5**	5.35
Reactive Silica (SiO2)	mg/L			2.0
Total Suspended Solids	mg/L			2.4
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			2.1
Conductivity	uS/cm			19

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-19
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		390
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			3.6
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.019
Total Calcium (Ca)	ug/L			560
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			2.3
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		1900
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	<0.50
Total Magnesium (Mg)	ug/L			350
Total Manganese (Mn)	ug/L			280
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			260
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			5.5
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			7.7
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-20	
Sampling Date				**8-Jun-16**	**8-Jun-16**
Calculated Parameters	**Units**				(DUP 2)
Anion Sum	me/L			0.110	0.120
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0
Calculated TDS	mg/L			14	14
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0
Cation Sum	me/L			0.250	0.250
Hardness (CaCO3)	mg/L			3.0	3.1
Ion Balance (% Difference)	%			38.9	35.1
Langelier Index (@ 20C)	N/A			NC	NC
Langelier Index (@ 4C)	N/A			NC	NC
Nitrate (N)	mg/L	**2.935**		<0.050	<0.050
Saturation pH (@ 20C)	N/A			NC	NC
Saturation pH (@ 4C)	N/A			NC	NC
Inorganics					
Total Alkalinity (Total as CaCO3)	mg/L			<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			3.9	4.1
Colour	TCU			250	230
Nitrate + Nitrite	mg/L			<0.050	<0.050
Nitrite (N)	mg/L	**0.06**		<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050	<0.050
Total Organic Carbon (C)	mg/L			17	18
Orthophosphate (P)	mg/L			0.011	0.012
pH	pH	**6.5-9**	**6-9.5**	4.90	4.94
Reactive Silica (SiO2)	mg/L			4.7	4.7
Total Suspended Solids	mg/L			1.0	2.2
Dissolved Sulphate (SO4)	mg/L			<2.0	<2.0
Turbidity	NTU			1.5	2.5
Conductivity	uS/cm			25	26

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-20	
Sampling Date				8-Jun-16	8-Jun-16
Metals	**Units**				(DUP 2)
Total Aluminum (Al)	ug/L	**5 / 100[(1)]**		510	520
Total Antimony (Sb)	ug/L			<1.0	<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0	<1.0
Total Barium (Ba)	ug/L			3.1	3.4
Total Beryllium (Be)	ug/L			<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0
Total Boron (B)	ug/L	**1500**		<50	<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37[(2)]**		0.018	0.020
Total Calcium (Ca)	ug/L			560	610
Total Chromium (Cr)	ug/L			3.3	<1.0
Total Cobalt (Co)	ug/L			0.81	0.77
Total Copper (Cu)	ug/L	**2 - 4[(3)]**	**600**	<2.0	<2.0
Total Iron (Fe)	ug/L	**300**		1800	1700
Total Lead (Pb)	ug/L	**1 - 7[(4)]**	**400**	0.80	0.74
Total Magnesium (Mg)	ug/L			390	390
Total Manganese (Mn)	ug/L			120	110
Total Molybdenum (Mo)	ug/L	**73**		<2.0	<2.0
Total Nickel (Ni)	ug/L	**25 - 150[(5)]**	**1000**	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100
Total Potassium (K)	ug/L			170	190
Total Selenium (Se)	ug/L	**1**		<1.0	<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10	<0.10
Total Sodium (Na)	ug/L			2400	2500
Total Strontium (Sr)	ug/L			5.5	5.8
Total Thallium (Tl)	ug/L	**0.8**		<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0
Total Titanium (Ti)	ug/L			9.2	7.0
Total Uranium (U)	ug/L	**15**		<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	5.2	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-21
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			14
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.290
Hardness (CaCO3)	mg/L			3.1
Ion Balance (% Difference)	%			45.0
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.9
Colour	TCU			210
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			18
Orthophosphate (P)	mg/L			0.011
pH	pH	**6.5-9**	**6-9.5**	5.05
Reactive Silica (SiO2)	mg/L			3.3
Total Suspended Solids	mg/L			3.6
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			2.4
Conductivity	uS/cm			21

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-21
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		500
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			4.4
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.019
Total Calcium (Ca)	ug/L			510
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			2.2
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		3500
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	<0.50
Total Magnesium (Mg)	ug/L			440
Total Manganese (Mn)	ug/L			230
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			170
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			6.2
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			8.2
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	5.4

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	WC-22
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.0900
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			13
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.250
Hardness (CaCO3)	mg/L			2.5
Ion Balance (% Difference)	%			47.1
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.3
Colour	TCU			120
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050
Total Organic Carbon (C)	mg/L			14
Orthophosphate (P)	mg/L			0.012
pH	pH	**6.5-9**	**6-9.5**	5.53
Reactive Silica (SiO2)	mg/L			2.7
Total Suspended Solids	mg/L			7.6
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			3.9
Conductivity	uS/cm			19

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	WC-22
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		450
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			4.5
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.022
Total Calcium (Ca)	ug/L			370
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			9.5
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		3000
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	<0.50
Total Magnesium (Mg)	ug/L			380
Total Manganese (Mn)	ug/L			900
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			240
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			2000
Total Strontium (Sr)	ug/L			4.8
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			6.9
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-40
Sampling Date				**8-Jun-16**
Calculated Parameters	**Units**			
Anion Sum	me/L			0.210
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Calculated TDS	mg/L			14
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0
Cation Sum	me/L			0.280
Hardness (CaCO3)	mg/L			2.9
Ion Balance (% Difference)	%			14.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	**2.935**		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			7.5
Colour	TCU			65
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	**0.06**		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**(1)		<0.050
Total Organic Carbon (C)	mg/L			5.5
Orthophosphate (P)	mg/L			<0.010
pH	pH	**6.5-9**	**6-9.5**	5.56
Reactive Silica (SiO2)	mg/L			0.73
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO4)	mg/L			<2.0
Turbidity	NTU			0.67
Conductivity	uS/cm			32

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-40
Sampling Date				**8-Jun-16**
Metals	**Units**			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		200
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0
Total Barium (Ba)	ug/L			3.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	**1500**		<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.016
Total Calcium (Ca)	ug/L			660
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0
Total Iron (Fe)	ug/L	**300**		210
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	<0.50
Total Magnesium (Mg)	ug/L			300
Total Manganese (Mn)	ug/L			53
Total Molybdenum (Mo)	ug/L	**73**		<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			220
Total Selenium (Se)	ug/L	**1**		<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10
Total Sodium (Na)	ug/L			4800
Total Strontium (Sr)	ug/L			5.0
Total Thallium (Tl)	ug/L	**0.8**		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			<2.0
Total Uranium (U)	ug/L	**15**		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-1									
Sampling Date				**9-Oct-14**	**13-Nov-14**	**18-Dec-14**	**22-Jan-15**	**22-Jan-15**	**29-Apr-15**	**28-May-15**	**30-Jun-15**	**29-Jul-15**	**24-Aug-15**
Calculated Parameters	**Units**							SW-1D (DUP)					
Anion Sum	me/L			0.140	0.170	0.100	0.120	0.120	0.060	0.0900	0.0800	0.0800	0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L			14	16	10	12	13	6	8.0	9.0	10	12
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L			0.290	0.290	0.190	0.210	0.210	0.110	0.160	0.170	0.180	0.230
Hardness (CaCO3)	mg/L			5.5	5.0	3.3	3.5	3.5	1.6	2.6	2.9	3.3	4.0
Ion Balance (% Difference)	%			34.9	26.1	31.0	27.3	27.3	29.4	28.0	36.0	38.5	39.4
Langelier Index (@ 20C)	N/A			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	**2.935**		<0.050	0.061	<0.050	0.087	0.080	0.052	<0.050	0.062	0.051	<0.050
Saturation pH (@ 20C)	N/A			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Inorganics													
Total Alkalinity (Total as CaCO3)	mg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			5.1	5.8	3.4	4.0	4.2	1.9	3.1	2.6	2.8	3.7
Colour	TCU			150	160	99	83	100	85	110	170	160	230
Nitrate + Nitrite	mg/L			<0.050	0.061	<0.050	0.087	0.080	0.052	<0.050	0.062	0.051	<0.050
Nitrite (N)	mg/L	**0.06**		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.10	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L			13	18	8.2	7.0	7.5	6.3	7.5	12	12	11 (1)
Orthophosphate (P)	mg/L			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	**6.5-9**	**6-9.5**	5.55	4.59	5.23	4.87	4.91	5.19	5.85	6.00	5.57	5.59
Reactive Silica (SiO2)	mg/L			2.5	3.9	2.7	3.8	4.0	1.9	1.1	2.1	2.6	3.2
Dissolved Sulphate (SO4)	mg/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU			1.1	0.64	0.59	0.62	0.69	0.76	1.1	1.2	1.1	1.2
Conductivity	uS/cm			30	33	25	27	27	14	16	17	18	21
Total Suspended Solids				-	-	-	-	-	-	-	-	-	-
Field Parameters													
Temperature	°C			15.57	8	4.2	0.16	-	3.62	19.14	19.69	19.90	-
Conductivity	µS/cm			39	36	26.7	25	-	16	22	24	-	-
Total Dissolved Solids	g/L			0.031	0.035	-	0.029	-	-	-	-	-	-
Dissolved Oxygen	mg/L	**5.5-9.5**[(2)]		9.99	14.31	13.32	37.9	-	14.97	10.63	9.6	-	-
pH		**6.5-9**	**6-9.5**	3.97	2.63	4.1	2.89	-	6.48	5.25	5.49	5.3	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-1									
Sampling Date				**9-Oct-14**	**13-Nov-14**	**18-Dec-14**	**22-Jan-15**	**22-Jan-15**	**29-Apr-15**	**28-May-15**	**30-Jun-15**	**29-Jul-15**	**24-Aug-15**
Metals	**Units**							SW-1D (DUP)					
Total Aluminum (Al)	ug/L	**5 / 100**[1]		330	320	220	200	200	140	190	280	280	400
Total Antimony (Sb)	ug/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	2.7	1.5	1.3	<1.0	<1.0	<1.0	2.6	2.5	3.7	1.3
Total Barium (Ba)	ug/L			5.8	5.6	3.1	3.3	3.4	1.7	2.4	3.0	3.2	4.6
Total Beryllium (Be)	ug/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	**1500**		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.024	0.029	0.023	0.012	0.022	0.012	<0.010	0.028	0.014	0.022
Total Calcium (Ca)	ug/L			1200	1100	780	720	740	350	630	690	790	770
Total Chromium (Cr)	ug/L			<1.0	<1.0	<1.0	1.6	<1.0	<1.0	3.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L			0.51	0.52	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.53
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Iron (Fe)	ug/L	**300**		670	630	330	350	340	240	360	580	750	1000
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	0.51	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	0.57
Total Magnesium (Mg)	ug/L			590	560	330	400	410	170	240	290	310	420
Total Manganese (Mn)	ug/L			79	68	41	51	53	27	31	37	43	58
Total Mercury (Hg)	ug/L	**0.026**		<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.015	<0.013	<0.013	0.032
Total Molybdenum (Mo)	ug/L	**73**		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0	<2.0	<2.0	<2.0	2.6	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100	<100	<100	<100	<100	<100	150	170	140
Total Potassium (K)	ug/L			570	550	380	380	370	330	340	170	210	170
Total Selenium (Se)	ug/L	**1**		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L			3100	3000	2100	2300	2400	1200	1800	1900	1900	2300
Total Strontium (Sr)	ug/L			11.0	10	5.8	6.3	6.6	2.9	4.6	5.9	6.3	7.4
Total Thallium (Tl)	ug/L	**0.8**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L			3.8	3.2	3.3	2.4	2.2	3.2	2.7	3.7	3.7	5.0
Total Uranium (U)	ug/L	**15**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	2.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	5.0	5.1	7.8	<5.0	<5.0	<5.0	6.8	<5.0	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83[\log(\text{hardness})]-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465}$ * 0.2 for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-2A									
Sampling Date				**9-Oct-14**	**13-Nov-14**	**18-Dec-14**	**18-Dec-14**	**22-Jan-15**	**29-Apr-15**	**28-May-15**	**28-May-15**	**30-Jun-15**	**29-Jul-15**	**24-Aug-15**
Calculated Parameters	**Units**						SW-2AD (DUP)				SW-2AD (DUP)			
Anion Sum	me/L			0.150	0.180	0.100	0.110	0.130	0.0500	0.0900	0.0900	0.0800	0.0800	0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L			14	17	10	10	13	6.0	7.0	7.0	8.0	9.0	12
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L			0.290	0.300	0.180	0.180	0.210	0.110	0.140	0.140	0.160	0.180	0.220
Hardness (CaCO3)	mg/L			5.1	4.9	2.9	2.8	3.4	1.4	2.1	2.0	2.6	2.9	3.6
Ion Balance (% Difference)	%			31.8	25.0	28.6	24.1	23.5	37.5	21.7	21.7	33.3	38.5	37.5
Langelier Index (@ 20C)	N/A			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	**2.935**		0.11	0.065	<0.050	<0.050	0.079	<0.050	<0.050	<0.050	0.055	<0.050	<0.050
Saturation pH (@ 20C)	N/A			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Inorganics														
Total Alkalinity (Total as CaCO3)	mg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			5.0	6.3	3.6	3.8	4.2	1.6	3.1	3.1	2.8	2.8	3.7
Colour	TCU			160	160	100	100	110	96	120	120	170	180	230
Nitrate + Nitrite	mg/L			0.11	0.065	<0.050	<0.050	0.079	<0.050	<0.050	<0.050	0.055	<0.050	<0.050
Nitrite (N)	mg/L	**0.06**		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.052	<0.050	<0.050	<0.050	0.084
Total Organic Carbon (C)	mg/L			14	19	8.9	9.1	7.4	5.5	7.9	8.1	12	13	14 (1)
Orthophosphate (P)	mg/L			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	**6.5-9**	**6-9.5**	5.06	4.54	4.88	4.75	4.75	5.08	5.59	5.36	5.29	5.26	5.16
Reactive Silica (SiO2)	mg/L			2.7	3.9	2.8	2.7	3.7	1.9	1.1	1.1	1.9	2.6	3.2
Dissolved Sulphate (SO4)	mg/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU			1.1	0.50	0.59	0.23	0.70	0.29	1.5	1.4	0.99	0.97	1.9
Conductivity	uS/cm			31	33	25	25	28	13	16	15	17	19	21
Total Suspended Solids				-	-	-	-	-	-	-	-	-	-	-
Field Parameters														
Temperature	°C			13.57	7.89	4.2	-	0.27	3.34	20.64	-	18.81	21.2	-
Conductivity	µS/cm			38	37	27.4	-	25	16	23	-	24	-	-
Total Dissolved Solids	g/L			0.031	0.036	-	-	0.03			-		-	-
Dissolved Oxygen	mg/L	**5.5-9.5**[(2)]		8.97	13.07	12.88	-	36.14	15.35	9.91	-	9.18	-	-
pH		**6.5-9**	**6-9.5**	4.09	3.08	3.75	-	3.56	6.53	4.63	-	4.00	4.94	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-2A									
Sampling Date				**9-Oct-14**	**13-Nov-14**	**18-Dec-14**	**18-Dec-14**	**22-Jan-15**	**29-Apr-15**	**28-May-15**	**28-May-15**	**30-Jun-15**	**29-Jul-15**	**24-Aug-15**
Metals	**Units**						SW-2AD (DUP)	.			SW-2AD (DUP)			
Total Aluminum (Al)	ug/L	**5 / 100**[1]		330	340	210	210	210	140	190	190	280	300	400
Total Antimony (Sb)	ug/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	1.1	<1.0	1.5	1.3
Total Barium (Ba)	ug/L			5.6	5.8	3.2	3.0	3.3	1.6	2.2	2.2	3.0	3.5	4.6
Total Beryllium (Be)	ug/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	**1500**		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.026	0.028	0.017	0.017	0.013	<0.010	0.013	0.013	0.012	0.017	0.022
Total Calcium (Ca)	ug/L			1100	1000	640	590	680	290	470	460	580	620	770
Total Chromium (Cr)	ug/L			1.4	1.6	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L			0.49	0.58	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.53
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Iron (Fe)	ug/L	**300**		740	700	360	350	340	260	410	400	590	820	1000
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	0.78	0.55	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.55	0.62	0.57
Total Magnesium (Mg)	ug/L			570	570	320	310	410	160	220	210	280	330	420
Total Manganese (Mn)	ug/L			77	71	43	42	51	25	27	27	35	40	58
Total Mercury (Hg)	ug/L	**0.026**		<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.013	0.013	<0.013	<0.013	0.035
Total Molybdenum (Mo)	ug/L	**73**		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	110	<100	<100	<100	<100	<100	<100	150	170	140
Total Potassium (K)	ug/L			600	600	370	340	380	330	290	290	160	200	170
Total Selenium (Se)	ug/L	**1**		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L			3100	3100	2100	2000	2400	1200	1600	1600	1900	1900	2300
Total Strontium (Sr)	ug/L			11.0	9.5	5.6	5.2	6.6	3.0	4.1	3.9	5.0	6.3	7.4
Total Thallium (Tl)	ug/L	**0.8**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L			4.2	3.8	2.6	2.6	2.2	3.2	2.0	2.4	3.6	4.6	5.0
Total Uranium (U)	ug/L	**15**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	2.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	6.9	6.2	5.5	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83[\log(\text{hardness})]-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465}$ * 0.2 for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-4A									
Sampling Date				**9-Oct-14**	**13-Nov-14**	**13-Nov-14**	**18-Dec-14**	**22-Jan-15**	**29-Apr-15**	**28-May-15**	**30-Jun-15**	**29-Jul-15**	**24-Aug-15**
Calculated Parameters	**Units**					SW-4AD (DUP)		No Sample					
Anion Sum	me/L			0.150	0.180	0.180	0.110		0.0400	0.110	0.0700	0.0700	0.110
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L			15	16	16	11		6.0	9.0	8.0	9.0	12
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L			0.300	0.300	0.300	0.200		0.120	0.180	0.170	0.190	0.230
Hardness (CaCO3)	mg/L			5.9	5.6	5.6	3.5		1.6	3.1	3.0	3.6	3.9
Ion Balance (% Difference)	%			33.3	25.0	25.0	29.0		50.0	24.1	41.7	46.2	35.3
Langelier Index (@ 20C)	N/A			NC	NC	NC	NC		NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A			NC	NC	NC	NC		NC	NC	NC	NC	NC
Nitrate (N)	mg/L	**2.935**		0.093	0.062	<0.050	<0.050		<0.050	<0.050	0.064	<0.050	<0.050
Saturation pH (@ 20C)	N/A			NC	NC	NC	NC		NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A			NC	NC	NC	NC		NC	NC	NC	NC	NC
Inorganics													
Total Alkalinity (Total as CaCO3)	mg/L			<5.0	<5.0	<5.0	<5.0		<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			5.0	6.2	6.4	3.9		1.3	3.8	2.2	2.6	3.7
Colour	TCU			120	130	130	88		100	130	160	170	260
Nitrate + Nitrite	mg/L			0.093	0.062	<0.050	<0.050		<0.050	<0.050	0.064	<0.050	<0.050
Nitrite (N)	mg/L	**0.06**		<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050	<0.050	<0.050	<0.050		0.073	0.092	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L			9.3	16	16	8.2		5.5	9.7	12	18	14 (1)
Orthophosphate (P)	mg/L			<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	**6.5-9**	**6-9.5**	5.57	4.76	4.71	4.96		5.14	5.74	5.42	5.09	4.93
Reactive Silica (SiO2)	mg/L			3.4	3.5	3.6	2.9		2.5	1.5	2.0	2.3	3.0
Dissolved Sulphate (SO4)	mg/L			<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU			1.4	0.68	0.65	0.80		0.38	1.4	1.3	0.81	1.0
Conductivity	uS/cm			29	31	31	24		15	18	17	19	21
Total Suspended Solids				-	-	-	-		-	-	-	-	-
Field Parameters													
Temperature	°C			10.85	8.98	-	5.1		5.98	22.45	20.72	22.4	-
Conductivity	µS/cm			34	35	-	24.9		31	27	32	-	-
Total Dissolved Solids	g/L			0.03	0.033	-	-		-	-	-	-	-
Dissolved Oxygen	mg/L	**5.5-9.5**[(2)]		7.11	10.4	-	7.82		13.48	7.88	6.8	-	-
pH		**6.5-9**	**6-9.5**	4.27	3.71	-	3.75		6.56	5.34	5.34	4.92	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-4A									
Sampling Date				**9-Oct-14**	**13-Nov-14**	**13-Nov-14**	**18-Dec-14**	**22-Jan-15**	**29-Apr-15**	**28-May-15**	**30-Jun-15**	**29-Jul-15**	**24-Aug-15**
Metals	**Units**					SW-4AD (DUP)		No Sample					
Total Aluminum (Al)	ug/L	**5 / 100**[1]		250	300	310	220		130	240	300	350	390
Total Antimony (Sb)	ug/L			<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	5.8	2.9	2.8	2.0		1.1	7.3	5.4	5.6	5.6
Total Barium (Ba)	ug/L			3.4	4.6	4.4	3.2		1.7	2.8	2.8	3.7	3.4
Total Beryllium (Be)	ug/L			<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	**1500**		<50	<50	<50	<50		<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.015	0.024	0.025	0.044		0.012	0.013	0.016	0.014	0.021
Total Calcium (Ca)	ug/L			1500	1300	1300	810		350	780	710	860	930
Total Chromium (Cr)	ug/L			<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L			0.43	0.53	0.59	<0.40		<0.40	0.42	<0.40	0.63	0.48
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Iron (Fe)	ug/L	**300**		690	540	540	320		160	580	650	840	1100
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	0.54	<0.50	<0.50	<0.50		<0.50	<0.50	0.52	0.56	0.55
Total Magnesium (Mg)	ug/L			540	590	590	350		170	280	290	360	370
Total Manganese (Mn)	ug/L			53	58	58	41		20	37	32	42	51
Total Mercury (Hg)	ug/L	**0.026**		<0.013	<0.013	<0.013	<0.013		<0.013	0.015	<0.013	<0.013	0.028
Total Molybdenum (Mo)	ug/L	**73**		<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	100	100	<100		<100	<100	140	150	150
Total Potassium (K)	ug/L			450	500	520	480		290	280	140	180	200
Total Selenium (Se)	ug/L	**1**		<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10	<0.10	<0.10	<0.10		<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L			3200	3100	3200	2300		1300	1900	1900	1700	2200
Total Strontium (Sr)	ug/L			10	9.1	9.2	5.7		2.8	5.1	5.0	6.4	7.2
Total Thallium (Tl)	ug/L	**1**		<0.10	<0.10	<0.10	<0.10		<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L			5	3.7	3.9	2.3		2.4	4.7	3.8	3.8	4.9
Total Uranium (U)	ug/L	**15**		<0.10	<0.10	<0.10	<0.10		<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	2.9	2.8	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	19	7.8	6.9	12		<5.0	7.5	<5.0	<5.0	6.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83[\log(\text{hardness})]-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465}$ * 0.2 for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-5									
Sampling Date				**9-Oct-14**	**9-Oct-14**	**13-Nov-14**	**18-Dec-14**	**22-Jan-15**	**29-Apr-15**	**28-May-15**	**30-Jun-15**	**29-Jul-15**	**24-Aug-15**
Calculated Parameters	**Units**				SW-5D (DUP)								
Anion Sum	me/L			0.480	0.480	0.520	0.340	0.400	0.100	0.360	0.350	0.360	0.410
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			14	14	11	6.1	8.0	<1.0	7.8	9.3	11	13
Calculated TDS	mg/L			28	28	33	23	27	12	21	21	21	25
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L			0.480	0.470	0.510	0.340	0.430	0.240	0.350	0.350	0.340	0.420
Hardness (CaCO3)	mg/L			16	16	17	10	14	7.3	11	12	12	15
Ion Balance (% Difference)	%			0.00	1.05	0.970	0.00	3.61	41.2	1.41	0.00	2.86	1.20
Langelier Index (@ 20C)	N/A			(2.56)	(2.54)	-2.74	-3.79	-3.17	NC	-3.22	-3.00	-2.84	-2.55
Langelier Index (@ 4C)	N/A			(2.81)	(2.80)	-2.99	-4.04	-3.42	NC	-3.48	-3.26	-3.09	-2.80
Nitrate (N)	mg/L	**2.935**		0.10	0.15	0.051	0.094	0.096	0.870	<0.050	0.063	<0.050	0.055
Saturation pH (@ 20C)	N/A			9.43	9.46	9.52	10.0	9.77	NC	9.84	9.76	9.66	9.50
Saturation pH (@ 4C)	N/A			9.69	9.71	9.77	10.3	10.0	NC	10.1	10.0	9.92	9.75
Inorganics													
Total Alkalinity (Total as CaCO3)	mg/L			14	14	11	6.1	8.0	<5.0	7.8	9.3	11	13
Dissolved Chloride (Cl)	mg/L			4.0	4.1	5.2	4.0	5.0	1.5	3.4	1.9	1.7	2.2
Colour	TCU			22	23	26	30	23	28	27	23	24	37
Nitrate + Nitrite	mg/L			0.10	0.15	0.051	0.094	0.096	0.087	<0.050	0.063	<0.050	0.055
Nitrite (N)	mg/L	**0.06**		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.052	<0.050	<0.050
Total Organic Carbon (C)	mg/L			4.1	4.3	3.5	4.0	3.1	3.5	3.6	4.1	5.3	4.3
Orthophosphate (P)	mg/L			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	0.011
pH	pH	**6.5-9**	**6-9.5**	6.88	6.92	6.78	6.23	6.60	6.14	6.62	6.76	6.83	6.95
Reactive Silica (SiO2)	mg/L			1.8	1.8	3.1	3.0	3.1	2.3	<0.50	0.92	0.77	2.5
Dissolved Sulphate (SO4)	mg/L			3.5	3.6	7.0	4.6	4.4	2.5	5.0	5.0	4.5	3.6
Turbidity	NTU			0.44	0.81	1.4	6.2	2.4	0.69	1.2	0.83	0.91	1.2
Conductivity	uS/cm			48	47	49	35	45	28	34	35	32	40
Total Suspended Solids				-	-	-	-	-	-	-	-	-	-
Field Parameters													
Temperature	°C			13.98	-	7.76	4.6	1.75	2.7	20.84	20.51	22.4	-
Conductivity	µS/cm			53	-	49	35.7	36	27	40	40	-	-
Total Dissolved Solids	g/L			0.044	-	0.048	-	0.041	-	-	-	-	-
Dissolved Oxygen	mg/L	**5.5-9.5**[(2)]		8.26	-	15.04	13.08	39.05	14.95	8.59	9.13	-	-
pH		**6.5-9**	**6-9.5**	5.46	-	4.61	5.94	4.8	6.67	6.56	6.34	6.39	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-5									
Sampling Date				9-Oct-14	9-Oct-14	13-Nov-14	18-Dec-14	22-Jan-15	29-Apr-15	28-May-15	30-Jun-15	29-Jul-15	24-Aug-15
Metals	**Units**				SW-5D (DUP)								
Total Aluminum (Al)	ug/L	**5 / 100**[1]		28	29	100	460	210	98	61	45	43	52
Total Antimony (Sb)	ug/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	29	30	15	17	22	15	41	32	20	47
Total Barium (Ba)	ug/L			4.5	4.6	5.5	6.1	6.1	4.6	4.4	3.6	4.1	4.5
Total Beryllium (Be)	ug/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	**1500**		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		<0.010	0.016	<0.010	0.010	0.011	0.018	<0.010	<0.010	<0.010	<0.010
Total Calcium (Ca)	ug/L			5000	4900	5300	3000	4100	2200	3500	3600	3800	4500
Total Chromium (Cr)	ug/L			<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L			<0.40	<0.40	<0.40	<0.40	0.44	0.61	<0.40	<0.40	<0.40	<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Iron (Fe)	ug/L	**300**		400	400	470	730	680	560	880	530	610	750
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Magnesium (Mg)	ug/L			940	920	970	640	780	430	600	640	720	870
Total Manganese (Mn)	ug/L			60	59	28	25	150	200	65	50	45	97
Total Mercury (Hg)	ug/L	**0.026**		<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.015	<0.013	<0.013	0.027
Total Molybdenum (Mo)	ug/L	**73**		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100	<100	<100	<100	<100	<100	140	170	150
Total Potassium (K)	ug/L			730	710	1000	720	740	480	670	580	350	450
Total Selenium (Se)	ug/L	**1**		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L			2700	2700	2900	2200	2700	1400	1700	1800	1500	2000
Total Strontium (Sr)	ug/L			28.0	27	26	15	21	11	18	20	25	27
Total Thallium (Tl)	ug/L	**0.8**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L			<2.0	<2.0	3.2	14	4.2	<2.0	<2.0	<2.0	<2.0	<2.0
Total Uranium (U)	ug/L	**15**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	<2.0	3.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0	<5.0	<5.0	<5.0	<5.0	5.4	<5.0	<5.0	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465}$ * 0.2 for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-6A									
Sampling Date				**9-Oct-14**	**13-Nov-14**	**18-Dec-14**	**22-Jan-15**	**29-Apr-15**	**28-May-15**	**30-Jun-15**	**30-Jun-15**	**29-Jul-15**	**24-Aug-15**
Calculated Parameters	**Units**							No Sample			SW-6AD (DUP)		
Anion Sum	me/L			0.130	0.160	0.110	0.120		0.0700	0.0700	0.0700	0.0700	0.100
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L			13	15	11	12		7.0	7.0	7.0	8.0	12
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L			0.240	0.270	0.190	0.210		0.140	0.170	0.160	0.170	0.240
Hardness (CaCO3)	mg/L			4.5	5.0	3.5	3.9		2.5	2.8	2.8	3.2	4.4
Ion Balance (% Difference)	%			29.7	25.6	26.7	27.3		33.3	41.7	39.1	41.7	41.2
Langelier Index (@ 20C)	N/A			NC	NC	NC	NC		NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A			NC	NC	NC	NC		NC	NC	NC	NC	NC
Nitrate (N)	mg/L	**2.935**		0.080	<0.050	<0.050	<0.050		<0.050	0.053	0.059	<0.050	<0.050
Saturation pH (@ 20C)	N/A			NC	NC	NC	NC		NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A			NC	NC	NC	NC		NC	NC	NC	NC	NC
Inorganics													
Total Alkalinity (Total as CaCO3)	mg/L			<5.0	<5.0	<5.0	<5.0		<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			4.3	5.8	3.8	4.2		2.5	2.2	2.2	2.4	3.5
Colour	TCU			80	99	87	82		88	140	130	140	220
Nitrate + Nitrite	mg/L			0.080	<0.050	<0.050	<0.050		<0.050	0.053	0.059	<0.050	<0.050
Nitrite (N)	mg/L	**0.06**		<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050	<0.050	<0.050	<0.050		<0.050	0.22	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L			9.1	13	8.1	8.9		7.3	10	11	13	12 (1)
Orthophosphate (P)	mg/L			<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	**6.5-9**	**6-9.5**	5.73	5.05	5.13	5.09		5.76	5.79	5.64	5.50	5.37
Reactive Silica (SiO2)	mg/L			3.3	3.5	2.8	3.4		1.1	1.3	1.2	1.6	2.7
Dissolved Sulphate (SO4)	mg/L			<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU			0.30	0.69	0.42	0.44		0.43	0.65	1.1	0.49	0.54
Conductivity	uS/cm			25	28	24	25		16	16	16	16	20
Total Suspended Solids				-	-	-	-		-	-	-	-	-
Field Parameters													
Temperature	°C			10.98	8.04	4.6	1.15		17.4	18.09	-	20.4	-
Conductivity	µS/cm			31	32	25.7	23		34	22	-	-	-
Total Dissolved Solids	g/L			0.028	0.032	-	0.027		-	-	-	-	-
Dissolved Oxygen	mg/L	**5.5-9.5**[(2)]		8.88	14.49	12.01	42.34		10.89	9.17	-	-	-
pH		**6.5-9**	**6-9.5**	3.56	3.43	4.49	3.98		5.72	8.73	-	5.02	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-6A									
Sampling Date				**9-Oct-14**	**13-Nov-14**	**18-Dec-14**	**22-Jan-15**	**28-May-15**	**30-Jun-15**	**30-Jun-15**	**29-Jul-15**	**24-Aug-15**
Metals	**Units**									SW-6AD (DUP)		
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		220	290	240	250	220	290	39	320	470
Total Antimony (Sb)	ug/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	4.0	1.9	1.1	1.0	3.2	3.0	130	2.8	7.6
Total Barium (Ba)	ug/L			3.2	4.1	3.1	3.0	2.3	2.6	5.4	3.1	3.8
Total Beryllium (Be)	ug/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	**1500**		<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.024	0.021	0.014	0.011	<0.010	0.016	0.061	0.012	0.031
Total Calcium (Ca)	ug/L			1000	1200	790	880	620	670	4900	770	1000
Total Chromium (Cr)	ug/L			<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L			<0.40	0.44	<0.40	<0.40	<0.40	<0.40	1.8	<0.40	1.0
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	3.0	<2.0	<2.0
Total Iron (Fe)	ug/L	**300**		500	480	330	380	370	550	1400	750	1500
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Magnesium (Mg)	ug/L			470	510	360	410	230	270	660	310	430
Total Manganese (Mn)	ug/L			50	51	39	46	29	33	110	38	100
Total Mercury (Hg)	ug/L	**0.026**		<0.013	<0.013	<0.013	<0.013	0.017	<0.013	0.013	<0.013	0.035
Total Molybdenum (Mo)	ug/L	**73**		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	7.2	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100	<100	<100	<100	140	140	160	150
Total Potassium (K)	ug/L			340	470	300	300	280	190	640	200	240
Total Selenium (Se)	ug/L	**1**		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L			2800	3000	2200	2300	1700	1800	1900	1700	2200
Total Strontium (Sr)	ug/L			7.1	7.7	5.9	6.1	4.4	4.8	19	5.5	7.6
Total Thallium (Tl)	ug/L	**0.8**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L			2.7	3.1	2.8	2.6	2.8	3.4	<2.0	3.5	4.3
Total Uranium (U)	ug/L	**15**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	2.2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	<5.0	5.5	<5.0	<5.0	5.7	<5.0	13	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465}$ * 0.2 for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-9									
Sampling Date				**9-Oct-14**	**13-Nov-14**	**18-Dec-14**	**22-Jan-15**	**29-Apr-15**	**28-May-15**	**30-Jun-15**	**29-Jul-15**	**29-Jul-15**	**24-Aug-15**
Calculated Parameters	**Units**											SW-9 (DUP)	
Anion Sum	me/L			0.310	0.200	0.140	0.180	0.100	0.170	0.130	0.250	0.250	0.150
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			5.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.6	5.5	<1.0
Calculated TDS	mg/L			23	17	12	16	9	13	13	18	18	15
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L			0.420	0.340	0.230	0.290	0.180	0.260	0.310	0.330	0.340	0.330
Hardness (CaCO3)	mg/L			10	6.4	4.1	5.0	2.8	4.7	7.4	8.0	8.2	7.5
Ion Balance (% Difference)	%			15.1	25.9	24.3	23.4	28.6	20.9	40.9	13.8	15.3	37.5
Langelier Index (@ 20C)	N/A			(4.22)	NC	NC	NC	NC	NC	NC	-3.90	-3.83	NC
Langelier Index (@ 4C)	N/A			(4.47)	NC	NC	NC	NC	NC	NC	-4.16	-4.08	NC
Nitrate (N)	mg/L	**2.935**		0.091	<0.050	<0.050	0.051	<0.050	<0.050	<0.050	0.064	<0.050	<0.050
Saturation pH (@ 20C)	N/A			10.2	NC	NC	NC	NC	NC	NC	10.3	10.3	NC
Saturation pH (@ 4C)	N/A			10.4	NC	NC	NC	NC	NC	NC	10.5	10.5	NC
Inorganics													
Total Alkalinity (Total as CaCO3)	mg/L			5.8	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.6	5.5	<5.0
Dissolved Chloride (Cl)	mg/L			6.7	7.2	4.8	6.2	3.4	6.1	4.8	4.8	4.9	5.4
Colour	TCU			160	140	110	73	82	80	150	130	130	180
Nitrate + Nitrite	mg/L			0.091	<0.050	<0.050	0.051	<0.050	<0.050	<0.050	0.064	<0.050	<0.050
Nitrite (N)	mg/L	**0.06**		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050	<0.050	<0.050	<0.050	0.082	<0.050	0.14	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L			17	18	8.9	7.0	6.1	6.7	12	12	12	11 (1)
Orthophosphate (P)	mg/L			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	**6.5-9**	**6-9.5**	5.94	4.96	5.06	5.44	5.77	6.17	6.33	6.36	6.43	6.05
Reactive Silica (SiO2)	mg/L			3.2	3.1	2.4	3.5	1.6	1.5	2.2	2.7	2.6	2.3
Dissolved Sulphate (SO4)	mg/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU			1.5	0.74	0.49	0.77	1.0	0.72	0.99	1.0	0.93	0.82
Conductivity	uS/cm			39	35	27	32	19	29	29	30	30	29
Total Suspended Solids				-	-	-	-	-	-	-	-	-	-
Field Parameters													
Temperature	°C			16.03	7.84	4	0.07	2.72	20.69	18.96	20.3	-	-
Conductivity	µS/cm			47	36	28.2	26	20	34	34	-	-	-
Total Dissolved Solids	g/L			0.037	0.037	-	0.033		-	-	-	-	-
Dissolved Oxygen	mg/L	**5.5-9.5**[(2)]		9.82	12.85	12.34	21.9	15.27	10.89	9.9	-	-	-
pH		**6.5-9**	**6-9.5**	4.90	3.17	4.66	3.68	6.6	5.72	8.04	6.14	-	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-9									
Sampling Date				9-Oct-14	13-Nov-14	18-Dec-14	22-Jan-15	29-Apr-15	28-May-15	30-Jun-15	29-Jul-15	29-Jul-15	24-Aug-15
Metals	**Units**											SW-1 (DUP)	
Total Aluminum (Al)	ug/L	**5 / 100**[1]		410	330	310	210	160	170	280	260	270	320
Total Antimony (Sb)	ug/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Barium (Ba)	ug/L			6.6	5.7	3.5	3.4	2.1	2.4	3.3	3.4	3.3	4.2
Total Beryllium (Be)	ug/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	**1500**		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[2]		0.024	0.025	0.019	0.010	0.014	<0.010	0.014	<0.010	<0.010	0.015
Total Calcium (Ca)	ug/L			2300	1400	890	1100	640	1100	1700	1800	1900	1700
Total Chromium (Cr)	ug/L			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	<1.0
Total Cobalt (Co)	ug/L			<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Total Copper (Cu)	ug/L	**2 - 4**[3]	**600**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Iron (Fe)	ug/L	**300**		620	500	280	290	220	210	440	490	510	580
Total Lead (Pb)	ug/L	**1 - 7**[4]	**400**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Magnesium (Mg)	ug/L			1100	700	450	530	300	480	740	830	840	810
Total Manganese (Mn)	ug/L			140	75	51	51	36	34	57	56	60	76
Total Mercury (Hg)	ug/L	**0.026**		<0.013	<0.013	<0.013	<0.013	<0.013	0.013	<0.013	<0.013	0.013	0.032
Total Molybdenum (Mo)	ug/L	**73**		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[5]	**1000**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100	<100	<100	<100	<100	150	160	170	160
Total Potassium (K)	ug/L			640	530	340	350	300	270	200	210	240	180
Total Selenium (Se)	ug/L	**1**		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L			4000	3900	2900	3900	2400	3500	3100	3300	3500	3500
Total Strontium (Sr)	ug/L			10	7.7	5.0	5.6	2.8	4.2	5.9	6.5	5.9	6.6
Total Thallium (Tl)	ug/L	**0.8**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L			4.8	4.1	3.5	2.8	3.1	3.0	3.1	3.6	4.9	4.3
Total Uranium (U)	ug/L	**15**		0.11	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.13	0.11
Total Vanadium (V)	ug/L			<2.0	2.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	5.2	7.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465}$ * 0.2 for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table 1: General Chemistry

		CCME FAL	MMER	SW-10			
Sampling Date				**30-Jun-15**	**29-Jul-15**	**24-Aug-15**	**24-Aug-15**
Calculated Parameters	**Units**						SW-10 (DUP)
Anion Sum	me/L			0.450	0.580	0.770	0.780
Bicarb. Alkalinity (calc. as CaCO3)	mg/L			8.0	11	25	25
Calculated TDS	mg/L			32	39	55	55
Carb. Alkalinity (calc. as CaCO3)	mg/L			<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L			0.450	0.510	0.960	0.960
Hardness (CaCO3)	mg/L			15	20	30	30
Ion Balance (% Difference)	%			0.00	6.42	11.0	10.3
Langelier Index (@ 20C)	N/A			-3.05	-3.09	-2.67	-2.60
Langelier Index (@ 4C)	N/A			-3.31	-3.35	-2.92	-2.85
Nitrate (N)	mg/L	**2.935**		0.060	0.070	<0.050	<0.050
Saturation pH (@ 20C)	N/A			9.70	9.46	8.91	8.91
Saturation pH (@ 4C)	N/A			9.96	9.71	9.16	9.16
Inorganics							
Total Alkalinity (Total as CaCO3)	mg/L			8.0	11	25	25
Dissolved Chloride (Cl)	mg/L			2.9	2.2	2.9	3.1
Colour	TCU			9.4	<5.0	100	110
Nitrate + Nitrite	mg/L			0.060	0.070	<0.050	<0.050
Nitrite (N)	mg/L	**0.06**		<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	**Varies**[(1)]		<0.050	<0.050	0.10	0.19
Total Organic Carbon (C)	mg/L			2.1	1.8	7.6	7.4
Orthophosphate (P)	mg/L			<0.010	0.012	0.064	0.064
pH	pH	**6.5-9**	**6-9.5**	6.65	6.37	6.24	6.31
Reactive Silica (SiO2)	mg/L			4.7	6.0	7.0	7.0
Dissolved Sulphate (SO4)	mg/L			9.6	14	8.8	8.9
Turbidity	NTU			1.0	<0.10	10	8.3
Conductivity	uS/cm			46	54	75	76
Total Suspended Solids				-	-	-	-
Field Parameters							
Temperature	°C			14.14	17.6	-	-
Conductivity	µS/cm			51	-	-	-
Total Dissolved Solids	g/L			-	-	-	-
Dissolved Oxygen	mg/L	**5.5-9.5**[(2)]		11.8	-	-	-
pH		**6.5-9**	**6-9.5**	6.55	5.88	-	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, *e.g.* , if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table 2: Metals

		CCME FAL	MMER	SW-10			
Sampling Date				**30-Jun-15**	**29-Jul-16**	**24-Aug-15**	**24-Aug-15**
Metals	**Units**						SW-10 (DUP)
Total Aluminum (Al)	ug/L	**5 / 100**[(1)]		39	28	220	210
Total Antimony (Sb)	ug/L			<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	**5.0**	**1000**	130	36	380	370
Total Barium (Ba)	ug/L			5.4	7.3	7.1	6.9
Total Beryllium (Be)	ug/L			<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	**1500**		<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	**0.04 - 0.37**[(2)]		0.061	0.10	0.011	<0.010
Total Calcium (Ca)	ug/L			4900	6400	10000	10000
Total Chromium (Cr)	ug/L			<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L			1.8	1.4	2.2	2.3
Total Copper (Cu)	ug/L	**2 - 4**[(3)]	**600**	3.0	3.6	<2.0	<2.0
Total Iron (Fe)	ug/L	**300**		1400	78	6000	5900
Total Lead (Pb)	ug/L	**1 - 7**[(4)]	**400**	<0.50	<0.50	1.1	1.2
Total Magnesium (Mg)	ug/L			660	900	1200	1200
Total Manganese (Mn)	ug/L			110	78	290	280
Total Mercury (Hg)	ug/L	**0.026**		<0.013	<0.013	0.025	0.028
Total Molybdenum (Mo)	ug/L	**73**		<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	**25 - 150**[(5)]	**1000**	7.2	8.7	6.2	6.1
Total Phosphorus (P)	ug/L			140	170	140	140
Total Potassium (K)	ug/L			640	790	1000	1000
Total Selenium (Se)	ug/L	**1**		<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	**0.1**		<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L			1900	2100	2500	2400
Total Strontium (Sr)	ug/L			19	26	33	33
Total Thallium (Tl)	ug/L	**0.8**		<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L			<2.0	<2.0	2.8	2.9
Total Uranium (U)	ug/L	**15**		<0.10	<0.10	0.21	0.20
Total Vanadium (V)	ug/L			<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	**30**	**1000**	13	19	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{\{0.83(\log[\text{hardness}])-2.46\}}$ for hardness between 17-280 mg/L $CaCO_3$ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Appendix D
Surface Water Baseline Analytical Results

Table 1: Metals

		CCME ISQG	CCME PEL	21-Jul-16								
Sampling Location				**SED1**	**SED2**	**SED3**	**SED4**	**SED5**	**SED6**	**SED7**	**SED8**	**SED9**
Metals	**Units**											
Total Aluminum (Al)	mg/kg			15000	8800	18000	20000	22000	18000	18000	2600	12000
Total Antimony (Sb)	mg/kg			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Arsenic (As)	mg/kg	**5.9**	**17**	78	110	73	58	41	400	300	<2.0	5.1
Total Barium (Ba)	mg/kg			69.0	24.0	32.0	28.0	61.0	29.0	32.0	7.5	36.0
Total Beryllium (Be)	mg/kg			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Bismuth (Bi)	mg/kg			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	mg/kg			<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	mg/kg	**0.6**	3.5	<0.30	<0.30	<0.30	<0.30	1.8	<0.30	<0.30	<0.30	<0.30
Total Chromium (Cr)	mg/kg	**37.3**	90	23	12	26	25	23	23	25	4.7	16
Total Cobalt (Co)	mg/kg			7	3.1	8	18	6.2	17	15	<1.0	2.9
Total Copper (Cu)	mg/kg	**35.7**	**197**	12	4.5	6.6	15	56	9.2	14	2.2	8.7
Total Iron (Fe)	mg/kg			28000	11000	34000	35000	12000	36000	28000	2400	6300
Total Lead (Pb)	mg/kg	**35**	**91.3**	7.8	7.2	13	23	12	26	9.6	13.00	24
Lithium	mg/kg			40	18	28	37	34	23	40	<2.0	12
Total Manganese (Mn)	mg/kg			420	200	420	1000	200	670	690	40	160
Total Mercury (Hg)	mg/kg	**0.17**	0.486	0.014	0.027	0.31	0.1	0.077	0.04	0.015	0.088	0.13
Total Molybdenum (Mo)	mg/kg			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	mg/kg			16	8.8	15	16	30.0	12	19	2.5	6.5
Rubidium	mg/kg			12	6.0	16.0	8.1	6.3	11	15	3	9
Total Selenium (Se)	mg/kg			<1.0	<1.0	<1.0	<1.0	3.7	<1.0	<1.0	<1.0	1.7
Total Silver (Ag)	mg/kg			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Strontium (Sr)	mg/kg			5.9	8.2	<5.0	6.5	21.0	<5.0	6.7	<5.0	7.7
Total Thallium (Tl)	mg/kg			<0.10	<0.10	0.14	0.21	0.14	0.18	0.12	<0.10	0.18
Total Tin (Sn)	mg/kg			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Uranium (U)	mg/kg			0.77	0.43	0.44	0.66	3.4	0.61	0.69	0.32	1.2
Total Vanadium (V)	mg/kg			24	12	35	31	22	42	27	3.5	17
Total Zinc (Zn)	mg/kg	**123**	**315**	49.0	29.0	55.0	63.0	89	54.0	53.0	<5.0	21

Notes

CCME ISQG - Canadian Council of Ministers of the Environment, Interim Sediment Quality Guidelines

CCME PEL - Canadian Council of Ministers of the Environment, Probable Effects Level